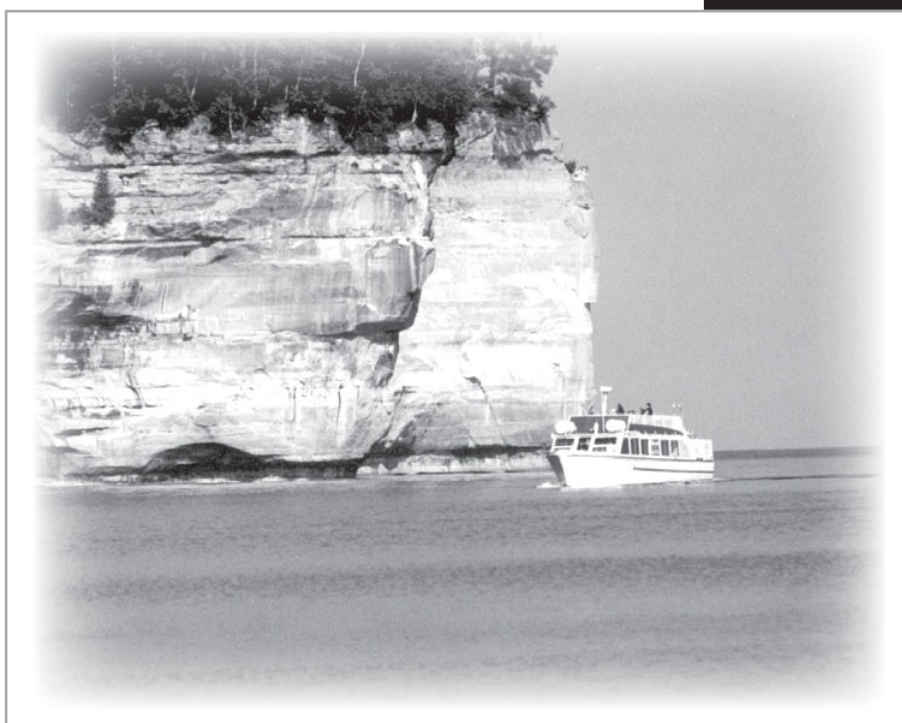


Chapter 3

THE AFFECTED ENVIRONMENT



INTRODUCTION

This chapter describes the existing environment that could be affected by actions proposed in this general management plan and wilderness study for Pictured Rocks National Lakeshore. This chapter includes the specific topics that are analyzed to determine the environmental impacts of the alternatives. These topics were selected based on federal

law, regulations, executive orders, NPS expertise, and concerns expressed by other agencies or members of the public during scoping. The conditions described established the baseline for the analyses of effects found in the chapter on “Environmental Consequences.”

CULTURAL RESOURCES

HISTORICAL OVERVIEW

Prehistory

Evidence has been found that prehistoric peoples occupied the Upper Peninsula of Michigan from the Paleo- Indian period through the Archaic and the Woodland eras. In each of these ages, people tended to live in fishing camps along the Lake Superior shoreline in warm weather and in inland camps from which they hunted in cold weather. Over time, more specialized tools were developed that permitted easier exploitation of resources. Little agriculture developed because of a short growing season.

History

By 1500 the Chippewa were firmly established in the Upper Peninsula. Although their arrival date in the Pictured Rocks area has not been precisely established, small groups lived there when the first Europeans, the French, arrived in the early 1600s. Like the population of the Late Woodland period, the Chippewa, too, occupied shoreline settlements in spring and summer while moving inland during the winter season.

Following contact with white men, the history of the Chippewa can be said to be one of resource exploitation and a growing dependence on the goods of European culture. The French induced the Native American Indian population to exchange pelts for beads, copper, brass and iron implements, guns, and liquor. The French were primarily interested in making money from the fur trade and did not establish settlements or farms. The British, who ruled the area after 1763, did nothing to change the social and economic trends begun by the French. Following acquisition of the area by the United States in

1783, whites pushed the Chippewa aside to settle the wilderness and exploit the land.

In the immediate national lakeshore area, the Chippewa lived on Grand Island and later occupied the mainland near the community of Old Munising. They established a cemetery on Sand Point and used the Grand Sable Dune area for special purposes, including fasting and gravesites. Abandoned lodges were noted along the shore of Grand Marais in 1826. The Chippewa relinquished their Upper Peninsula lands to the United States in 1836.

With the introduction of the Bessemer process in America after the Civil War, the production of steel emerged as an important industry in America. Pig (crude) iron, the product of a blast furnace, was refined to produce steel and wrought iron. The School-craft blast furnace was constructed near Munising Falls in 1867, and the first pig iron was produced in 1868. About nine brick or stone kilns were originally constructed near the furnace, and at least 20 more were built during succeeding years in the nearby area to produce the necessary charcoal from the area's hardwood forests. A small company town, which has come to be known as Old Munising, was established along Munising Creek below the furnace, later spreading to an area along the south bay. Iron manufacture and its attendant commercial activities served as the financial mainstay of the area's economy until 1877 when the furnace closed.

Logging operations in the Pictured Rocks area began about 1880. Some of the first cuttings were white pine, which was highly valued because of its relatively light weight, ease of transport, and suitability as building material. In 1882 Thomas Sullivan established the first logging camp in what is now the national lakeshore; this camp came to be known as Sullivan's Landing. During the three years that the camp operated near present- day

Twelvemile Beach, some 50 million board feet of white pine were cut. About 10 years later, a second white pine logging boom began; this boom far overshadowed the first one. A wooden chute, known as the Log Slide, was constructed near the Grand Sable Dunes. The cut logs were hauled by horses to the slide, slid down to the beach below, and towed inside log booms to the mills at Grand Marais.

Although the initial logging activity in the national lakeshore area concentrated on harvesting large white and red pine stands, subsequent logging activity, beginning in the 1890s and lasting through the 1930s, periodically cut the upland hardwoods for cord wood for blast furnace charcoal, maple woodenware, and hardwood veneer mills. Hemlock was cut to facilitate the hide tanning operations in Munising. Soon after 1900, smaller trees were taken for pulpwood to feed the Munising Paper Company plant, which opened in 1904. Forest regrowth in what is now the national lakeshore was subsequently cut during the late 1950s and early 1960s for pulpwood. Harvesting continues on lands in the inland buffer zone.

With the disappearance of the iron industry and the temporary decline of the timber industry during the early 1900s came renewed attempts to develop a few small family subsistence farms in the area. The Bell and Abrahamson farms in Grand Marais, as well as the Riihima and Becker farms near Munising, produced dairy and staple crops for local consumption. Many of these old farm fields, now clearings, are visible, although most of the buildings have collapsed or been removed.

Lake Superior influenced the development and population of the national lakeshore area to a large degree. Dangerous cliffs, offshore reefs, and stormy seas imperiled mariners in the 1840s and 50s when commercial traffic began on the lake. Aids to navigation were developed in the form of light stations (Au Sable -1874 and Grand Marais Harbor of Refuge in 1897), a U.S. Lifesaving Station in

Grand Marais (1895-1938), and U.S. Coast Guard motor lifeboat stations in Munising and Grand Marais (1933-1960 and 1938-1975). These stations influenced the commercial and social fabric of life for many years in the towns that flank the lakeshore.

Another historic use of the area included the development of post-World War II family and corporate “camps” in the Upper Peninsula and within what is now the national lakeshore. The Michigan-Wisconsin Pipeline Company owned several hundred acres in the Beaver Basin (now in the national lakeshore), where it developed a resort camp for employees and clients during the early 1950s. Access roads, trout ponds, deer feeding structures and a boathouse on Beaver Lake were part of this development. Along with the corporate camp, several family fishing and hunting camps sprang up on lakeside properties or forested lands that were owned by their builders or leased from the Cleveland-Cliffs Iron Company (Forestry Division).

ARCHEOLOGICAL RESOURCES

Various studies have examined and evaluated archeological resources in Pictured Rocks National Lakeshore. A survey of the national lakeshore’s lakeshore zone and the mouths of its rivers, entitled “Final Report: An Archaeological Survey of the Pictured Rocks Lakeshore,” was conducted under contract by Jeffrey P. Briggs of the University of Michigan in 1968. In 1979 NPS Denver Service Center personnel conducted an intensive archeological recovery effort centered on the Munising Falls area, where a parking area, comfort station, and visitor center were to be constructed.

During the 1980s and early 1990s, archeological surveys by NPS Midwest Archeological Center personnel have focused on Section 106 (National Historic Preservation Act of 1966, as amended) compliance documentation for proposed parking areas and comfort stations,

as well as restoration efforts at the Au Sable Light Station. These surveys, as well as previous archeological work in the national lakeshore, have been recorded in “Archeological Inventory and Evaluative Testing in Pictured Rocks National Lakeshore, Michigan, 1985-1990,” by Bruce A. Jones, *Occasional Studies in Anthropology* No. 30, 1993.

Native Americans have lived in what is now Pictured Rocks National Lakeshore since the end of the Ice Age. There are 38 recorded archeological sites in the national lakeshore; most of these are associated with Woodland and Archaic period seasonal habitation sites. Most of the known sites are near today’s national lakeshore developed areas, such as on high sand bluffs adjacent to Lake Superior, in coves in sandstone bedrock along the lake’s shoreline, near streams and the mouths of creeks and rivers, and along inland lake shorelines; these areas provided natural habitation sites in past times and are attractive to people today for the same reasons. Artifacts associated with the known sites include fire-cracked rock, bi-polar cores, chert and quartz flakes, grit-tempered sherds, and other lithic scatter. Much of this material has been recovered at short-term hunting or fishing camps apparently used by Indians traveling up and down the lake. Sites are rarely found in the inland upland areas. Most sites are subsurface.

Archeological resources in the national lakeshore reflect all periods of human occupation – from the early hunters to late prehistoric fishfolk to historic iron and timber industry operations, to sailors on the lake. Historic archeological sites in the national lakeshore are primarily associated with the iron (furnace/smelter ruins and charcoal kilns), timber (logging railroads, roads, and camps), and maritime industries (shipwrecks), as well as with small farming operations. Historic shipwrecks in the national lakeshore were examined and evaluated during an NPS Southwest Regional Office study by C. Patrick

Labadie, entitled *Submerged Cultural Resources Study, Pictured Rocks National Lakeshore* (Southwest Cultural Resources Center Professional Papers No. 22), published in 1989. The lake bed and everything on it, including shipwrecks, are under the jurisdiction of the state.

ETHNOGRAPHIC RESOURCES

The principal study that examines ethnographic resources in the national lakeshore, entitled (Draft) *Traditional Ojibway Resources in the Western Great Lakes*, was prepared by the University of Arizona, Tucson, Bureau of Applied Research in Anthropology on June 2, 1999.

The Ojibway have cultural affiliation with the lands of Pictured Rocks National Lakeshore. Although the national lakeshore and its surrounding areas may have been visited or used occasionally by traveling parties, warriors, or refugees belonging to other ethnic groups, the area remained under Ojibway control until 1820, when the first land cession treaty was signed by leaders of the local bands and representatives of the U.S. Government. Six Ojibway tribes may rightfully claim cultural affiliation with the lands in the national lakeshore, including: the Sault Ste. Marie Tribe of Chippewa Indians; the Bay Mills Community; the Bad River Band of Lake Superior Chippewas, Wisconsin; the Red Cliff Band of Lake Superior Chippewas, Wisconsin; the Garden River Band, Ontario; and the Manitoulin Island Community of Ojibway, Ottawa, Ontario.

There are at least five other Ojibway bands whose lands are on or near the north banks of the St. Mary’s River and north shore of Lake Superior and have close ties with the Garden River and Sault Ste. Marie Ojibway. These are the Batchewana Band, Thessalon Band, Serpent Band, Sagamak Nishnaabek Band, and White Fish Lake Band.

Lands within the boundaries of the national lakeshore are believed to have been and continue to be of spiritual and religious significance to the Chippewas. The Grand Sable Dunes were considered to be a sacred place; a Euro-American visitor in 1835 reported finding an Indian burial/spirit house and a probable vision quest site on the dunes. Other areas in the national lakeshore of interest to Native Americans are Lake Superior, the Pictured Rocks, and high prominences such as Miners Castle. Portions of the forested areas are also important for the variety of game and plant species they offer. Former burial grounds are on Sand Point and at the end of City Limits Road in Munising. Because their subsistence cultural patterns were tied closely to Lake Superior, canoes, and fishing, Chippewa encampments were generally in sheltered areas along the lake-shore that afforded protection from northwest gales. The Munising/Grand Island and Grand Marais sites, as well as other creek and river mouths, were suitable, but much of the shoreline between was too unprotected for establishing campsites.

CULTURAL LANDSCAPES AND HISTORIC STRUCTURES

Initial reconnaissance by the NPS staff suggests that various cultural landscapes might be eligible for listing on the National Register of Historic Places. However, with one exception (the Au Sable Light Station), the required studies have not yet been undertaken. The eligibility of these landscapes should be determined in consultation with the state historic preservation officer. Cultural landscapes in the national lakeshore that require further assessment include the Munising (Sand Point) Coast Guard Station, Grand Marais Coast Guard Station, farmsteads, apple orchards, and the Michigan-Wisconsin Pipeline Company.

The Munising Range Light Station property is a former U.S. Coast Guard Auxiliary

Operations Station that includes the front and rear range lights and the associated property in Munising (a total of 0.32 acres of land, lot 17). The buildings are thought by national lakeshore staff to be eligible for the National Register of Historic Places, although no formal assessment has yet been conducted. The U.S. Coast Guard will continue to maintain the operating aids to navigation (the front and rear range lights) that comprise two of the six structures on the property. The lot size is too small to support visitor use parking; therefore, when the building is no longer required for office purposes, the national lakeshore could adaptively use the building for purposes such as museum collection storage or lease to an organization or private entity, similar to the arrangement at Grand Marais.

Six structures are reported on the site: a metal garage, a brick and wood station building, a brick paint locker, the Munising front range light (brick and cast iron cylindrical tower), the Munising rear range light (brick and cast iron), and a skeletal steel VHF tower.

HISTORIC PROPERTIES

National Register of Historic Places

The following two historic properties in the national lakeshore are listed in the National Register of Historic Places; both encompass significant archeological components:

Au Sable Light Station, listed on May 23, 1978, under national register criteria A (for its association with events that have made a significant contribution to the broad patterns of American history) and C (for its significant architectural characteristics). It also contains an archeological site.

Schoolcraft Furnace Site, listed on December 28, 1977, under national register criterion A. It also contains an archeological site.

The following two historic properties in the national lakeshore have been determined eligible for listing on the National Register of Historic Places:

The Grand Marais Coast Guard Station, determined eligible for listing by the Michigan State Historic Preservation Officer on November 15, 1990, under criteria A and C.

The Munising (Sand Point) Coast Guard Station, determined eligible for listing by the Michigan State Historic Preservation Officer on January 27, 1999, under criteria A and C.

Other archeological sites/historic properties that may meet national register criteria include numerous archeological sites along exposed beaches (particularly in the Miners and Chapel Beach areas) as well as at inland sites associated with prehistoric shorelines or lakes.

List of Classified Structures

The List of Classified Structures is a computerized, evaluated inventory of all historic and prehistoric structures having historical, architectural, or engineering significance. The following structures have been placed on the List of Classified Structures for the national lakeshore:

- Sand Point Coast Guard Station main building
- Sand Point oil house
- Sand Point boathouse
- Au Sable keeper's residence
- Au Sable garage
- Au Sable Lighthouse
- Au Sable assistant keepers' duplex residence
- Au Sable metal oil house
- Au Sable brick kerosene shed
- Au Sable brick privy #1
- Au Sable brick privy #2
- Au Sable fog signal house

- Au Sable boathouse
- Au Sable seawall
- Au Sable cistern
- U.S. Coast Guard dwelling (Grand Marais)
- U.S. Coast Guard Station quarters #1 (Grand Marais)
- Blast furnace
- Kilns

MUSEUM COLLECTIONS

The museum collection housed at the national lakeshore includes more than 15,000 catalogued items representing a variety of natural and cultural themes. More than 36,000 catalogued archeological artifacts are housed at the Midwest Archeological Center in Lincoln, Nebraska. Archeological artifacts in the center's collection include thousands of items, most of which have not been catalogued.

The park collection has an underrepresentation of geological and other natural history specimens. No natural history study collections are available for the natural resources staff. Future acquisition efforts for the collection will focus on furnishings for the Au Sable Light Station, the Munising (Sand Point) Coast Guard Station, and additional natural history collections.

Some maritime theme items in the national lakeshore's collection are exhibited in the Grand Marais Maritime Museum. Others are on display at the Munising Falls Interpretive Center.

The main park collection is housed on the third floor of the Grand Marais Maritime Museum, in the loft of the Abrahamson Barn, and at park headquarters in Munising. Environmental conditions for the museum collection stored at all locations are substandard. Temperature and humidity controls are nonexistent, resulting in wide variability for these parameters. Although the Abrahamson Barn artifacts are stored on

shelves and covered with plastic, the plastic is covered with bat guano.

Improving collection storage and curatorial processing has been delayed as the national

lakeshore waits for funding to construct a new headquarters building in Munising. Design for the new building includes space for storage and collection management activities.

NATURAL RESOURCES

SPECIES OF CONCERN

Species of concern includes federal and state threatened or endangered species as well as species whose status globally or locally may be approaching a level of rarity that warrants monitoring at the state or federal level. The U.S. Fish and Wildlife Service was consulted to confirm listings of threatened or

endangered species known or likely to occur in the national lakeshore.

The National Park Service also consulted with the Michigan Department of Natural Resources, Natural Features Inventory to obtain a current list of state and federal species within the national lakeshore.

TABLE 6: LIST OF SPECIES OF CONCERN AT PICTURED ROCKS NATIONAL LAKESHORE

| | | Federal Threatened | Federal Endangered | State Threatened | State Endangered | State Species of Concern |
|----------------------------------|----------------------------|-----------------------|-----------------------|---------------------|---------------------|--------------------------------|
| <i>Accipter gentiles</i> | Northern goshawk | | | | | X |
| <i>Alces alces</i> | Moose | | | | | X |
| <i>Botrychium acuminatum</i> | Acute- leaved moonwort | | | | X | |
| <i>Botrychium campestre</i> | Prairie moonwort, dunewort | | | X | | |
| <i>Botrychium hesperium</i> | Western moonwort | | | X | | |
| <i>Botrychium mormo</i> | Goblin moonwort | | | X | | |
| <i>Buteo lineatus</i> | Red- shouldered hawk | | | X | | |
| <i>Callitriche hermaphrodita</i> | Autumnal water- starwort | | | | | X |
| <i>Calypso bulbosa</i> | Calypso or fairy- slipper | | | X | | |
| <i>Canis lupus</i> | Gray wolf | X | | X | | |
| <i>Charadrius melodus</i> | Piping plover | | X | | X | |
| <i>Cirsium pitcheri</i> | Pitcher's thistle | X | | X | | |
| <i>Crataegus douglasii</i> | Douglas hawthorn | | | | | X |
| <i>Cryptogramma stelleri</i> | Slender cliff- break | | | | | X |
| <i>Cypripedium arietnum</i> | Ram's head lady- slipper | | | | | X |
| <i>Dendroica cerulea</i> | Cerulean warbler | | | | | X |
| <i>Elymus glaucus</i> | Blue wild- rye | | | | | X |
| <i>Elymus mollis</i> | American dune wild- rye | | | | | X |
| <i>Empetrum nigrum</i> | Black crowberry | | | X | | |
| <i>Falco peregrinus</i> | Perigrine falcon | | | | X | |
| <i>Gavia immer</i> | Common loon | | | X | | |

| | | Federal Threatened | Federal Endangered | State Threatened | State Endangered | State Species of Concern |
|-----------------------------------|--------------------------------|-----------------------|-----------------------|---------------------|---------------------|--------------------------------|
| <i>Listera auriculata</i> | Auricled twayblade | | | | | X |
| <i>Myriophyllum alterniflorum</i> | Alternate-leaved water-milfoil | | | | | X |
| <i>Myriophyllum farwellii</i> | Farwell's water-milfoil | | | X | | |
| <i>Pandion haliaetus</i> | Osprey | | | X | | |
| <i>Pinguicula vulgaris</i> | Butterwort | | | | | X |
| <i>Potamogeton confervoides</i> | Alga pondweed | | | | | X |
| <i>Stellaria longipes</i> | Stichwort | | | | | X |
| <i>Tanacetum huronense</i> | Lake Huron tansy | | | X | | |
| <i>Trumertropis huroniana</i> | Lake Huron locust | | | X | | |
| <i>Trisetum spicatum</i> | Downy oat-grass | | | | | X |
| <i>Vaccinium cespitosum</i> | Dwarf bilberry | | | X | | |

As the bald eagle population in the Great Lakes area has increased, they have established nest sites and territories within the national lakeshore. The nests at the lakeshore are relatively isolated. There are no recreational uses within the primary or secondary buffer areas of each nest during critical periods. Boating is permitted on a lake near one of the nests in the tertiary buffer during critical periods, which is consistent with the *Northern States Bald Eagle Recovery Plan* (USFWS, 1983). Nest activity and success have varied each year.

In July 1999, the U.S. Fish and Wildlife Service proposed removing the bald eagle from the list of threatened species. When and if the bald eagle is delisted, a five-year nationwide monitoring program will be implemented to continue collecting data on the population. Inventories will continue at the national lakeshore.

Piping plovers have nested within the national lakeshore boundary on the beach of Lake Superior at Grand Marais in the past, but there has been no evidence of nesting since 1992. The national lakeshore provides

potential nesting and forage habitat. In April 2001, the U.S. Fish and Wildlife Service designated this section of shoreline a critical habitat for piping plover (USFWS 2001). This property is just north of the Grand Marais ranger station.

Many of the species of concern identified at the national lakeshore, including Pitcher's thistle, are found in the Grand Sable Dunes Research Natural Area; others are found in various habitats throughout the national lakeshore. The U.S. Fish and Wildlife Service has released a recovery plan for Pitcher's thistle (USFWS 2002). The recovery plan ranks the Pitcher's thistle population occurring in the area of the Grand Sable Dunes an "A" under NatureServe Elemental Global Ranking Criteria. An "A" rank suggests a dune size over 250 acres and a population of at least 5,000 individuals.

Grand Sable Dunes is a designated research natural area under NPS policies because the area contains many rare plants. Few such undeveloped dunes remain in the Great Lakes area. Research natural areas are established for areas that are prime examples of natural

ecosystems and areas with significant genetic resources with value for long-term baseline observational studies or as control areas for comparative studies in other areas. The Grand Sable Dunes also are designated a critical dune area by the Michigan Department of Environmental Quality. This designation identifies the dunes as an environmental area warranting protection under the Michigan Coastal Management Program. The national lakeshore staff manages for Pitcher's thistle consistent with the U.S. Fish and Wildlife Service's Pitcher's thistle recovery plan (USFWS 2002). Lakeshore staff cooperates in ongoing efforts to control invasive plant species to protect and recover this species and monitor populations.

The gray wolf is listed as threatened by the U.S. Fish and Wildlife Service. Late winter surveys indicated 321 wolves in the Upper Peninsula in 2003 (see USFWS comment letter reprinted later in this document). Because of winter conditions in the lakeshore, it is not likely that denning will occur within the national lakeshore. According to the Michigan Department of Natural Resources (MDNR 2000), the national lakeshore does not contain significant habitat for gray wolves because the lakeshore lacks a year-round food source. Wolf use at the national lakeshore is limited and linked to the deer population and occurs during spring, summer, and autumn. Deer migrate out of the national lakeshore during the winter.

WETLANDS

The national lakeshore has an abundance of wetlands as identified in the *National Wetland Inventory*. The full range of wetland types, from riparian, palustrine, and lacustrine, can be found throughout the national lakeshore. Most are within the Beaver and Chapel Basins and were formed by glaciation and other geophysical processes.

Lake Superior forms the northern border of Pictured Rocks National Lakeshore. The lake has a maximum depth of 420 m (1,335 feet) but is relatively shallow in the national lakeshore. Its surface lies at an elevation of 187 m (600 feet) above sea level. The maximum tidal/storm elevation has been recorded at 604.3 feet. In recent times the lake level has varied several feet in response to changes in precipitation and evaporation.

The more prominent inland lakes are Grand Sable, Beaver, Little Beaver, Chapel, Little Chapel, Miners, Trappers, Legion, Kingston, and the Shoe Lakes. These lakes range in size from the 762-acre Beaver Lake to the 10-acre Miners Lake. Most of the inland lakes, with the exception of Grand Sable Lake and Chapel Lake, are shallow (3-6 m/10-20 ft in average depth). Many of the lakes have a moderate amount of dissolved nutrients and are very clear (visibility of 2-5 meters or 6-15 feet). Logging in the area and recurrent fires may have caused erosion and nutrient deposition in the lakes. Miners Lake and Little Chapel Lake exhibit the greatest levels of dissolved nutrients. Legion Lake, the Shoe Lakes, and Grand Sable Lake are the most deficient in nutrients. The inland lakes vary considerably in their water chemistry, but many can be classified as moderately productive, brown, alkaline-water lakes.

The rivers and streams that flow to Lake Superior through the national lakeshore have a relatively steep gradient, including waterfalls, and are rather short. The more prominent waterfalls within the national lakeshore are Munising, Miners, Mosquito, Bridalveil, Chapel, Spray, and Sable Falls. Especially noticeable at the waterfalls is the brown color of the water, which is from humic acids originating from the breakdown of organic matter in wetlands headwaters. Portions of two rivers, both in the national lakeshore, are listed on the NPS "Nationwide Rivers Inventory" and were considered potentially eligible for designation under the Wild and Scenic Rivers Act. A 9-mile long

segment of the Miners River between County Road H-58 and its mouth at Lake Superior is included on the inventory because of its recreational, fish, and wildlife values. A 6.5-mile long segment of the Mosquito River, from Section 17, T48N, R17W to its mouth with Lake Superior, is included on the inventory because of its scenic, recreational, geologic, and fish values.

Scattered shrub and forested wetlands are found on upland benches and in poorly drained topographic lows (about 10% of the national lakeshore). These patches contain black spruce (*Picea mariana*), white spruce (*Picea glauca*), white cedar (*Thuja occidentalis*), and larch (*Larix laricina*). Larger white cedar stands in the national lakeshore are southwest of Grand Sable Lake, south of Au Sable Point, along the southern and western edges of Beaver Basin, and east and south of Miners Basin.

Bogs in the national lakeshore are usually filled-in lake beds having a sphagnum base and containing heath-family (ericaceous) shrubs, e.g., leatherleaf (*Chamaedaphne calyculata*), bog rosemary (*Andromeda glaucophylla*), bog laurel (*Kalmia polifolia*), and cranberries (*Vaccinium macrocarpon*; *V. oxycoccos*). Several species of orchids are found in association with bog communities. Four major bog areas are found in the lakeshore – at Sand Point, Beaver Lake, Legion Lake, and east of Twelvemile Beach campground. The best examples of marshes in the national lakeshore occur in shallow bays of large lakes and around the periphery of small lakes, most notably Miners Lake and Little Chapel Lake.

INVASIVE SPECIES

Nonnative Invasive Species

Nonnative invasive species are species that have been introduced into an environment in which they did not evolve and usually lack or

have fewer natural enemies that limit their reproduction and spread (Westbrooks 1998). They may possess other characteristics that give them the advantage over native species; these include rapid or prolific reproduction, ability of eggs or seeds to withstand extremes in environmental conditions, production of biological toxins that suppress native species, the presence of spines, thorns, or fowl taste that deter predation, and parasitization of native species (Westbrooks 1998).

Of the nonnative plant species at Pictured Rocks National Lakeshore, the following are notably invasive and pose a serious threat to the native plant community of the Grand Sable Dunes: spotted knapweed (*Centaurea maculosa*), white sweet-clover (*Melilotus alba*), red clover (*Trifolium pratense*), and several species of hawkweed (*Hieracium* spp.). Baby's breath (*Gypsophila paniculata*), currently found on the border of national lakeshore, is a potential threat to the native dune plant community should it become established.

Periwinkle (*Vinca minor*) is an aggressively growing, shade-tolerant, understory species that is capable of threatening the spring flora of the northern hardwoods, including trillium, Dutchman's breeches, spring beauty, hepatica, and squirrel corn.

Burdock (*Arctium minus*) is an exotic species that is found in small forest openings such as roadsides and the margins of parking lots. Spotted knapweed grows in this type of habitat as well as in the dunes.

Purple loosestrife (*Lythrum salicaria*) is a potential threat to habitats with moist soil and/or shallow, standing water along streams, lakes, and ponds of the national lakeshore. It has a strong foothold in the Naubinway area of Mackinac County to the southeast, and it is found occasionally in neighboring Marquette County to the west.

Blister rust is a nonnative fungal saprophyte that attacks conifers and causes a deformity

commonly known as “witch’s broom.” Currently its effects are limited. However, the beech blight is a fungus that has reached the eastern Upper Peninsula and is capable of altering the forest community structure.

Nonnative insect pests are a potential source of disturbance to the native plant communities. One such is the gypsy moth (*Lymantria dispar*), currently present in the national lakeshore but not in large numbers.

Aquatic Invasive Species

Aquatic invasive species pose a threat to native plant and animal communities throughout the upper midwestern states. These organisms include the well-known sea lamprey and numerous other fish, mussels, crayfish, zooplankton, aquatic macrophytes, and parasite species. The species that pose the greatest threat can reproduce rapidly and compete for the same habitat or for the same food as native species. Some have defensive adaptations that make them unsuitable as food to native species, so that they are less likely than their native counterparts in the food web to be preyed upon. Some actively prey on or parasitize native species. Aggressively growing, aquatic plants reduce light penetration in the water and grow so densely that they do not provide a protective habitat for native species. Once established, exotic species in an aquatic environment can rarely, if ever, be eliminated. The most effective means of control is prevention through management decisions and public education. The potential introduction of aquatic invasive species poses a serious threat to the health of

the aquatic habitats of Pictured Rocks National Lakeshore.

The pathways for the introduction of aquatic exotic species already exist at Pictured Rocks National Lakeshore and can be identified as the routes used by humans in their recreational activities. Exotic species may cling to the exterior of boats, may be carried in the bilge water or bait fish bucket, may cling to line and/or ropes, may be carried in sediment trapped in anchors, or cling to the clothing of hikers near bodies of water.

The distribution of several nonnative aquatic species in the Upper Peninsula of Michigan is known:

- Purple loosestrife is found in adjacent counties.
- The spiny water flea (a Eurasian zooplankton species) has been documented from six inland lakes in the Upper Peninsula, including Beaver Lake and Grand Sable Lake. This species was first noticed in the national lakeshore in Beaver Lake (Whitman et al. 2002), and its status is monitored regularly. The spiny water flea was first observed in Grand Sable Lake in early August 2002 and will be monitored regularly.
- Zebra mussels have been identified in two inland lakes in the Upper Peninsula of Michigan and along the north shore of Lake Michigan, 45 miles distant.
- Sea lamprey populations are monitored at Pictured Rocks National Lakeshore in cooperation with the USFWS Sea Lamprey Control Division, and their data are available for the entire Great Lakes basin.

WILDERNESS RESOURCES AND VALUES

THE WILDERNESS ACT OF 1964

Public Law 88- 577, National Wilderness Preservation System, more commonly known as the “Wilderness Act of 1964,” was established to enable Congress to set aside, preserve, and protect areas of pristine wilderness for the public to enjoy. Federal wilderness can be established only by an act of Congress.

The definition of wilderness is stated in the act as an area where “the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.” The land is also defined as an area that still holds its original character and does not have any permanent improvements from human intervention. The act continues by defining wilderness as an area that has “outstanding opportunities for solitude or a primitive and unconfined type of recreation.” The land has to include 5,000 acres or enough continuous area to make feasible protecting and preserving it. The act’s definition of wilderness concludes by stating that the area can contain components of geological, ecological, or otherwise scientific, educational, scenic, or historical value.

Although there are activities that are prohibited in wilderness areas (Section 4 [c]), the act does make allowances for some special provisions (Section 4 [d]) (see page 37). The prohibited activities include commercial operations, permanent roads (except to meet the minimum administrative needs for health and safety emergencies), temporary roads, installations or structures, motorized vehicles or equipment, motorboats or landing of aircraft, and any other forms of mechanical transport.

These areas are extremely important to wildlife, vegetation, outdoor enthusiasts, scientists, and educators. They represent and

foster an area of untouched land, where the natural processes can continue to thrive and be observed.

WILDERNESS RESOURCES IN THE CENTRAL UPPER PENINSULA

There are three designated wilderness areas in the central Upper Peninsula — the Rock River Canyon (5,285 acres) in Alger County and Big Island Lake (6,008 acres) and Strangmoor Bog Wilderness (25,150 acres, also designated) in Schoolcraft County. There are no state wilderness areas nearby. There is no designated wilderness in Pictured Rocks National Lakeshore.

WILDERNESS PROCESS AT PICTURED ROCKS NATIONAL LAKESHORE

NPS Management Policies at the time of the 1981 planning effort precluded wilderness consideration on areas where the federal government did not control the underground mineral rights, which was the case at Pictured Rocks National Lakeshore. Therefore, wilderness suitability was not evaluated for the national lakeshore.

However, recently revised *NPS Management Policies* allow consideration of wilderness eligibility and designation on lands owned by the federal government with outstanding mineral rights. The written agreement between Cleveland- Cliffs Iron Company (land subsequently purchased by the Kamehameha Schools and now sold to the ForestLand Group, Limited Liability Corporation) and the National Park Service would most likely preclude mineral exploration or development in the national lakeshore. This is a deed restriction that stays with the property.

During the scoping process for this general management plan, the National Park Service was asked to evaluate the lands in the national lakeshore (specifically the Beaver Basin) for wilderness characteristics in response to public comments. Lands within the Beaver Basin and Chapel Basin met the criteria. The National Park Service, in response to numerous requests to resolve the wilderness issue at the national lakeshore, is completing the required wilderness study and accompanying environmental impact statement within the general management planning process.

The elements of the wilderness study have been integrated into this document. The national lakeshore staff and planning team worked together to determine if wilderness characteristics existed within the national lakeshore. The planning team then wove appropriate descriptions of desired resource conditions and visitor experiences into the management prescriptions to accommodate

the existence of wilderness characteristics. There were opportunities for public involvement and comment with the review of the draft plan and during public meetings.

If the National Park Service approves the proposed wilderness, then a *wilderness proposal* will be prepared and forwarded to the secretary of the interior. The secretary of the interior reviews the NPS proposed wilderness and either approves or revises the proposal, and the result is forwarded to the president for his consideration. The president is then responsible for transmitting his recommendations to both houses of Congress (accompanied by maps and boundary descriptions). After the president's formal transmittal of the wilderness recommendation to Congress, Congress may enact the legislation needed to include the area within the national wilderness preservation system as "designated" and/or "potential" wilderness.

SOCIOECONOMIC RESOURCES

The national lakeshore is entirely within Alger County. Because any economic or social impacts that result from implementing the approved plan are most likely to be local in nature, this county will serve as the socio-economic affected area for this planning effort.

The 42 miles of lakeshore in Pictured Rocks National Lakeshore are flanked by the towns of Munising on the west and Grand Marais on the east. Munising is the county seat for Alger County and serves as a gateway to the national lakeshore. Munising had a population of 2,539 according to the 2000 Census. National lakeshore headquarters are north of town at the end of Sand Point Road. The National Park Service and the U.S. Forest Service jointly run a visitor center in town. The headquarters of Hiawatha National Forest is also in Munising. Visitor services include grocery stores, motels, restaurants, and supply stores. Medical services are available at Munising Memorial Hospital. Visitor services are more limited in Grand Marais.

The national lakeshore serves a regional audience as well as attracting visitors from other parts of the country. Several hundred thousand visitors each year travel to the national lakeshore. State Routes 28 and 94 are the principal highways leading to Munising. County Highway H- 58 provides access to the national lakeshore and connects Munising with Grand Marais, the eastern gateway town.

A national lakeshore ranger station and the Grand Marais Maritime Museum are in Grand Marais. The national lakeshore's Grand Sable Visitor Center is west of Grand Marais. These facilities are open only during the summer. The area around the eastern end of the national lakeshore is lightly populated. Burt Township's population, including the town of Grand Marais, was 480, based on the 2000 Census.

POPULATION

Alger County has a relatively low population. This county is one of 83 counties in Michigan. In 2000 it ranked 77th in the state with a population of 9,862 or 0.1% of the state total. Since 1990, the county's population had grown by 890 persons or 9.9%. Although this was a healthy increase, Alger County accounted for less than 0.2 % of the state's growth during this 10- year period.

In contrast, Michigan's population in 2000 was 9,938,444. The population growth rate for Michigan was less than three- quarters that of Alger County or 6.9%. However, this represented a total increase of 643,147 persons from 1990 to 2000.

INCOME

In 2000 the total personal income in Alger County was \$182,005,000. This income ranked 77th in the state and accounted for only 0.1% of the state total. In 1990 the total personal income was \$111,000,000. This income ranked 77th in the state. During these 10 years, Alger County's total personal income grew by 5.1% while Michigan has had the same growth rate. The national average was 5.5%.

Per capita personal income for the county was \$18,485 in 2000. This income was relatively low, comprising only 63% of the state's average of \$29,127. Alger County ranked 71st in the state. The national average per capita personal income was \$29,469. Since 1990, when the county per capita personal income was \$12,369, this per capita personal income grew by an average annual rate of 4.1%. Meanwhile, the state per capita personal income grew by 4.4%, and the national per capita personal income grew by 4.2%.

While growth in total personal income has kept pace with the rest of the state, total personal income for Alger County still remains low, which translates into a significantly lower per capita personal income when compared to the rest of the state. The historically low per capita personal income is an indication of a depressed economy.

Major Industries by Earnings

The earnings of people employed in Alger County increased from \$61,566,000 in 1990 to \$105,602,000 in 2000, a 71.5% gain (table 7). This increase represented a healthy average annual growth rate of 5.5%. In 2000, the major industries for Alger County (by earnings) were manufacturing at 36.9%, state and local government at 16.8%, and services at 16.7% of the total. In 1990 the largest industries were manufacturing representing 40.7% of earnings; state and local government at 19.2%; and services at 12.2%.

Major Industries by Employment

In 1990 there were 3,299 full- and part- time employees in Alger County. Manufacturing led the way, accounting for 24.3% (800 jobs) of the positions. Services, retail trade, and state and local government followed with 20.1% (664 jobs), 18.4% (606 jobs), and 14.8% (558 jobs) of the total positions respectively.

Although Alger County's population grew by 890 persons, the number of jobs increased by 715. By 2000 the number of full- and part-time employees had reached 4,014, a 21.7% increase over 1990 (table 8). By 2000, Services replaced Manufacturing as the top employer. Services had increased by 313 jobs. Manufacturing increased by only 51 positions and represented 21.2% (851 jobs) of all jobs in the county. State and local government was still an important sector in the county economy. This classification accounted for 13.9% (558 jobs) of the jobs, an increase of 70 positions.

TABLE 7: ALGER COUNTY, MICHIGAN: EARNINGS BY INDUSTRY

| Industry Sectors | 2000 | | 1990 | |
|---|---------------|------------|--------------|------------|
| | Earnings | % of Total | Earnings | % of Total |
| Manufacturing | \$38,919,000 | 36.85% | \$25,051,000 | 40.69% |
| State & Local Government | \$17,782,000 | 16.84% | \$11,814,000 | 19.19% |
| Services | \$17,678,000 | 16.74% | \$7,533,000 | 12.24% |
| Retail Trade | \$7,592,000 | 7.19% | \$5,768,000 | 9.37% |
| Finance, Insurance, & Real Estate | \$6,901,000 | 6.53% | \$1,218,000 | 1.98% |
| Construction | \$5,551,000 | 5.26% | \$3,066,000 | 4.98% |
| Transportation and Public Utilities | \$4,350,000 | 4.12% | \$2,691,000 | 4.37% |
| Federal Government | \$4,935,000 | 4.67% | \$1,878,000 | 3.05% |
| Wholesale Trade | \$1,222,000 | 1.16% | \$1,141,000 | 1.85% |
| Agricultural Services, Forestry, & Fishing, | (D) | (D) | \$899,000 | 1.46% |
| Military | \$278,000 | 0.26% | \$274,000 | 0.45% |
| Farm | (L) | (L) | \$233,000 | 0.38% |
| Mining | (D) | (D) | 0 | 0.00% |
| Total | \$105,602,000 | 100.00% | \$61,566,000 | 100.00% |

SOURCE: Bureau of Economic Analysis

(D) = Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

(L) = Less than \$50,000, but the estimates for this item are included in the totals.

TABLE 8. ALGER COUNTY, MICHIGAN FULL- TIME AND PART- TIME EMPLOYEES BY MAJOR INDUSTRY

| Industry Sectors | 2000 | | 1990 | |
|--|-----------|------------|-----------|------------|
| | # of Jobs | % of Total | # of Jobs | % of Total |
| Manufacturing | 851 | 21.20% | 800 | 24.25% |
| Services | 977 | 24.34% | 664 | 20.13% |
| Retail Trade | 658 | 16.39% | 606 | 18.37% |
| State & Local Government | 558 | 13.90% | 488 | 14.79% |
| Finance, Insurance, & Real Estate | 321 | 8.00% | 152 | 4.61% |
| Construction | 223 | 5.56% | 163 | 4.94% |
| Transportation & Public Utilities | 134 | 3.34% | 110 | 3.33% |
| Federal Government | 94 | 2.34% | 72 | 2.18% |
| Farm | 73 | 1.82% | 93 | 2.82% |
| Agricultural Services, Forestry, & Fishing | (D) | (D) | 65 | 1.97% |
| Wholesale Trade | 64 | 1.59% | 53 | 1.61% |
| Military | 20 | 0.50% | 29 | 0.88% |
| Mining | (D) | (D) | (L) | (L) |
| Total | 4,014 | 100.00% | 3,299 | 100.00% |

SOURCE: Bureau of Economic Analysis

(D) = Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

(L) = Less than \$50,000, but the estimates for this item are included in the totals.

UNEMPLOYMENT

Another indicator of the general economic health of a region is the rate of unemployment. Alger County's unemployment rates have exceeded state and national rates. In 1990 Michigan's unemployment rate was about 7.6%. In 2000, this rate had declined to 5.8%. Nationally, in 1990, the unemployment rate was 5.6%, and it increased to 5.8% by 2000. In 1990 the unemployment rate for Alger County was 9.5%. By 2000, the level of unemployment was 8.6%. Higher unemployment in Alger County relative to the state of Michigan is another indication that the local economy has been somewhat depressed.

POVERTY

The percentage of people in Alger County living below the poverty level in 1989 was 14.5%. The poverty rate declined to 13.8% in

1993. For 1995, the U.S. Census Bureau estimated that about 12.3% of the population of Alger County was living below the poverty level — about 1,140 people. At the same time, the estimated poverty rate for the state of Michigan was 12.6%. The national average poverty rate was 13.8% in 1995. By 1999 the poverty rate for the U.S. declined to 12.4%; Michigan's rate was 10.5%, and Alger County's proportion of people living in poverty was 10.3% — or 917 people. In terms of poverty, Alger County has been relatively better than the state or nation.

Growth in earnings and employment has helped to keep the poverty rate down in Alger County. Unfortunately, the wages have been relatively low, contributing to the relatively low personal per capita income.

TABLE 9: THE TOURISM INDUSTRY IN ALGER COUNTY, 1996

| Type of Establishment | Number of Firms | Employment | Payroll |
|---------------------------------|-----------------|------------|-------------|
| Eating and drinking places | 40 | 303 | \$2,144,000 |
| Hotels and other lodging places | 17 | 135 | \$ 787,000 |
| Amusement and recreation | 5 | <19 | D |

SOURCE: Central Upper Peninsula Planning and Development Regional Commission, 1999 (from County Business Patterns, 1996 Michigan State University)

D = not disclosed

TOURISM

The tourist industry plays a prominent role in the local economy. In 1996, 62 firms associated with tourism in Alger County employed more than 440 persons and provided a payroll in excess of \$2.9 million (table 9). Assuming employment in these firms remained stable into 1997, then tourism would have accounted for more than 10% of the county's total employment.

Total annual expenditures attributable to the national lakeshore's designation were estimated at \$6.41 million (Figlio 1992). Also, this figure represents only direct expenditures; indirect and induced expenditures (multiplier effects) were not included. Assuming the same spending patterns and accounting for inflation would place this amount of tourist expenditures at \$7.61 million in 1999 dollars.

From May to October many visitors to the national lakeshore choose to ride the privately operated tour boats to get a close- up view of

the Pictured Rocks from Lake Superior. The tour leaves from Munising, goes by the Grand Island lighthouse, and then proceeds along the national lakeshore to Chapel Beach and returns. The tour boat is usually within the 0.25- mile of the national lakeshore boundary that extends on the surface waters of Lake Superior. The tour boat operation provides seasonal employment for residents of the area.

A 2001 visitor survey (Simmons and Gramann, 2002) asked visitor groups to list the amount of money they spent both inside the national lakeshore and within 60 miles of the national lakeshore on the visit for which they were surveyed. Twenty- seven percent of visitor groups spent \$351 or more and 16% of visitor groups spent between \$101 and \$150. Four percent of visitor groups spent no money. Of the total expenditures by groups, 31% was for lodging, 18% was for restaurants and bars, and 12% was for groceries and take out food.

VISITOR USE AND EXPERIENCE

OPPORTUNITIES FOR RECREATIONAL ACTIVITIES

Visitation

Recent visitor use at the national lakeshore is displayed in table 10. Visitor use statistics at the national lakeshore have been reported for many years. However the national lakeshore's counting and reporting instructions changed in 1995 to comply with updated NPS standards. Therefore this recent data cannot be accurately compared to previous years' reported visitor use. Before 1995 the data showed a general upward trend in visitor use. The data since 1995 shows visitation as being relatively steady. It is expected that visitation to the national lakeshore in the next couple of years would remain about the same, plus or minus 5%.

Visitation begins to increase in spring, peaks in July and August, and decreases substantially beginning in October. Typically, visitors during the peak months (July and August) represent around 40% of the total annual visits.

A survey of visitors to Pictured Rocks National Lakeshore was conducted in 1990, the results of which were compiled and

published in a study entitled "Social Impact Assessment, Beaver Basin Rim Road" (Pitt, Lime, and Vlaming 1991).

For the 1990 study purposes, visitors were divided into three separate study groups and were analyzed independently:

- backpackers — camped at least one night in the backcountry
- day hikers — did not backpack but did take day hikes
- nonhikers — may have walked on the beach but did not take even short day hikes

Pictured Rocks was the primary destination for many visitors (70% of backpackers, 31% of day hikers, and 18% of nonhikers). Most of the rest listed the national lakeshore as one of several other trip destinations. Only about 10% of the visits were spontaneous; the rest had planned their trip in advance.

Most visitors currently visit the east-central portion of the national lakeshore (i.e., Twelvemile Beach) via the unpaved county road H-58. This means that about 70% of the total national lakeshore visitors use at least part of the unimproved section of H-58. Based

TABLE 10: PICTURED ROCKS NATIONAL LAKESHORE VISITATION, 1995–2002

| Year | Total Visits | Number of Visits in July and August | July-August Visits as Percentage of Annual Visits |
|------|--------------|--|---|
| 1995 | 462,687 | 204,240 | 44% |
| 1996 | 403,684 | 171,452 | 42% |
| 1997 | 413,963 | 185,252 | 45% |
| 1998 | 455,120 | 178,762 | 39% |
| 1999 | 442,916 | 166,931 | 38% |
| 2000 | 422,683 | 171,295 | 41% |
| 2001 | 421,312 | 188,654 | 45% |
| 2002 | 421,209 | 171,819 | 40% |

on the survey, nonbackpackers visit the east-central and Grand Sable areas more frequently than they visit the much more modern sites on the western end of the national lakeshore.

The Pictured Rocks National Lakeshore Visitor Study was conducted in the summer 2001 and reported in January 2002. Some interesting visitor use statistics were noted:

- Thirty-six percent of visitor groups were groups of two: thirty-six were in groups of three to five. Sixty-seven percent of visitor groups were family groups. Forty-six percent of visitors were age 31-55; 26% were age 15 years or younger.
- Eighty-five percent of visitor groups had visited only once in the past 12 months. More than half (54%) of visitor groups had visited one to four times in the past two to five years.
- Three percent of all visitors were international: 41% from Germany, 22% from Canada, 9% from France, and 7% from other countries. United States visitors were from Michigan (60%), Illinois (8%), Wisconsin (8%), and 35 other states.
- Forty-seven percent of visitors spent less than 24 hours at the national lakeshore. Twenty-eight percent of visitor groups spent one or two days, and 11% spent three days at the national lakeshore.
- Sixty-one percent of visitor groups visited the national lakeshore as one of several destinations, 30% as their primary destination, and 9% had not planned on visiting.
- The Miners Area (59%), Munising Falls (47%), and the Visitor Information Center (42%) were the most visited sites by visitor groups. The least visited site was the Grand Marais Maritime Museum (12%).
- The most common activities of visitor groups were sightseeing (78%), beach activities (67%), day hiking (66%), and enjoying solitude/quiet (65%).

Overnight Use

Most visitors (100% of backpackers, 85% of day hikers, and 60% of nonhikers) spent at least one night in or near the national lakeshore. Visitors who did not spend the night averaged almost six hours in the area.

Drive-In Camping

The season for the drive-in campgrounds is May through October. Campsites for visitors with disabilities, designated with the blue universal symbol of accessibility, are provided at each campground. Other public campgrounds are in the Hiawatha National Forest and Lake Superior State Forest.

Little Beaver Lake campground is 20 miles east of Munising off County Road H-58. Little Beaver has eight campsites on a beautiful inland lake. Little Beaver Lake features a 1-mile self-guiding interpretive trail and a 1.5-mile trail leading out to Lake Superior beaches and cliffs. There is access via a trail network that connects with the North Country National Scenic Trail, which traverses the national lakeshore for 42.8 miles between Munising and Grand Marais.

Twelvemile Beach campground is 12 miles west of Grand Marais off county road H-58. The campground's 36 sites are in two loops on a sandy bluff above Lake Superior's Twelvemile Beach. Twelvemile Beach also features a 2-mile self-guided interpretive trail.

Hurricane River campground is off County Road H-58, about 3 miles east of Twelvemile Beach campground where the Hurricane River cascades into Lake Superior. Eleven campsites are available in the lower campground loop and 10 in the upper loop. A level 1.5-mile walk on the North Country National Scenic Trail east from the lower campground leads past shipwreck remnants to the historic Au Sable Light Station.

Backcountry Camping

Thirteen hike-in backcountry campgrounds accessed by the North Country National Scenic Trail are available throughout the national lakeshore. Campgrounds are in diverse sites: atop rugged cliffs, on inland lakes, at river mouths, and near sandy Lake Superior beaches. Campgrounds are spaced 2-5 miles apart and have 3-10 sites each. Camping is restricted to the designated backcountry campgrounds.

Table 11 shows overnight use of the national lakeshore. This is based on actual use levels recorded by the national lakeshore. Many national lakeshore visitors use campgrounds, motels, and other types of lodging that are outside the national lakeshore.

Principal Visitor Opportunities

Visiting Pictured Rocks is not a passive activity. Very few people remain in their vehicle for their entire visit. At least 75% of each visitor study group walked along the shore or beach, went sightseeing, and took photographs. Day hikers outnumber nonhikers by more than four to one. Limited fishing also occurs. Within the national lakeshore are many two-track roads. Although primarily constructed for logging purposes, most of these roads are open to the public. The little use that occurs on these roads is primarily by hunters and local residents. Some hunting, primarily of black bear, occurs within the national lakeshore.

Common visitor activities at the national lakeshore are camping, beachcombing, hiking, and scenic driving. Most scenic driving occurs on County Road H-58. Although there is no officially designated wilderness in the national lakeshore, many visitors enjoy a wilderness experience in the lakeshore's backcountry because much of the national lakeshore is reachable only by foot or by water.

Scenic driving is another popular recreational activity at Pictured Rocks. Several people commented (in response to the preliminary draft alternatives) that gravel roads and primitive driving opportunities are slowly vanishing in the Upper Peninsula and that the diversity of opportunities should be maintained. Visitor surveys indicate that most visitors consider driving unpaved roads to be an important element of an enjoyable Pictured Rocks experience (Pitt, Lime, and Vlaming 1991). Unpaved and primitive roads compel drivers to slow down and allow people to experience their surroundings in more detail than if they were driving on a paved road designed for faster speeds.

ACCESS TO PRIMARY NATIONAL LAKESHORE FEATURES

A Lake Superior vantage point is best for seeing the Pictured Rocks cliff formations, which extend along the shoreline for about 10 miles between Sand Point and Spray Falls.

TABLE 11: PICTURED ROCKS NATIONAL LAKESHORE CAMPING

| Year | Tent Campers | RV Campers | Backcountry |
|------|--------------|------------|-------------|
| 1995 | 12,204 | 3,047 | 13,566 |
| 1996 | 11,536 | 3,195 | 11,647 |
| 1997 | 11,629 | 3,409 | 12,355 |
| 1998 | 13,053 | 3,968 | 13,346 |
| 1999 | 13,088 | 4,233 | 13,173 |
| 2000 | 13,121 | 3,618 | 13,849 |
| 2001 | 13,240 | 3,437 | 13,773 |
| 2002 | 12,865 | 3,912 | 15,952 |

The only other public access in the immediate area is Grand Island National Recreation Area, which requires access via boats. A ferry provides regular public service to the island.

Commercial motorboat tours to see the national lakeshore's Pictured Rocks run from Munising to Chapel Rock (about 17.5 miles northeast along the shoreline) and return. The motorboat tours provide about 37,000 people per year with cliff-viewing experiences. Commercial kayak tours are another way for people to see the cliffs (530 people in 2000). Kayak tours typically start at Miners Beach and go along the cliffs to the northeast for about 3 miles before returning.

Visitor Information

Pictured Rocks National Lakeshore/Hiawatha National Forest Service Visitor Information Center (Munising). Visitors can obtain information at this center as well as at a variety of recreational resources in the national lakeshore. The center maintains schedules of interpretive activities presented by NPS and USFS rangers. The center, at the junction of State Highway M-28 and County Road H-58, features an attractive pictorial exhibit area and a Hiawatha Interpretive Association sales area where visitors can purchase posters, slides, and a variety of publications that foster greater understanding of the area.

Munising Falls Interpretive Center. Next to Munising Falls, the interpretive center features displays on the rich natural and cultural history of the national lakeshore. Exhibits on early iron smelting, geology, forest history, rare and endangered species, logging, and recreation portray the national lakeshore's diversity.

Grand Marais Maritime Museum. The 1930s Grand Marais Coast Guard Station has been adapted by the National Park Service for use as the Grand Marais Maritime Museum. It features exhibits on Lake Superior shipwrecks

and the lives and times of the U.S. Life Saving Service, a forerunner of the Coast Guard. The museum includes a small bookstore and is open as staffing permits.

Grand Sable Visitor Center. The Grand Sable visitor center is near the east end of the national lakeshore and the beginning of the Lakeshore – North Country National Scenic Trail. An NPS ranger assists hikers, backpackers, and nature enthusiasts with information to make their stay more enjoyable. There is also a bookstore.

Sightseeing

Many attractions are accessible either by automobile or by short footpaths.

Munising Falls. Nestled in a cool and shaded valley, the 50-foot falls are at the end of a short hike on an improved trail. The trail is a good place to look for wildflowers in spring and early summer. Water from the creek once aided the production of iron at the Schoolcraft blast furnace, a story told on wayside exhibits and in the nearby interpretive center.

Sand Point. The Sand Point beach is a popular spot for walking in the evening to watch the sun go down over Munising Bay. The Sand Point Marsh Trail, a 0.5-mile interpretive trail (accessible to visitors with disabilities), also has a large print brochure for visually impaired visitors. NPS headquarters is on Sand Point.

Miners Castle. Beginning at the picnic area, a paved foot trail leads visitors past interpretive exhibits to breathtaking overlooks of Lake Superior and Grand Island. Erosion over long periods of time has created the interesting rock formations that give this place its name. About 65% of national lakeshore visitors go to the Miners area.

Miners Beach. A picnicker and beach walker's delight, Miners Beach extends for 1

mile along Lake Superior where waves roll in to polish beach cobbles.

Miners Falls/River. A gravel path through a deep woods environment leads to two overlooks. Miners River, plunging some 60 feet over a cliff, is home to brook and steelhead trout. A self-guiding interpretive trail guide is available at the trailhead. Miners River is popular for steelhead fishing in spring and fall.

Chapel Falls, Lake, Beach. After a brisk 1.5-mile walk past abundant stands of jewel weed, hikers can see the 90-foot Chapel Falls as it cascades toward Chapel Lake. About 1.5 miles later, hikers find Chapel Beach.

Beaver Lakes and Beaver Basin. Beaver Lakes provide small boating and fishing opportunities for visitors as they watch for bald eagle, osprey, and common loons.

White Pine Trail. At the Little Beaver Lake campground, this 1-mile self-guiding interpretive trail explores the plant and animal community of a cool, shady valley. Trail guides are at the trailhead.

White Birch Trail. With its trailhead at the Twelvemile Beach campground, this 2-mile self-guiding interpretive trail explores a variety of ancient Lake Nipissing beach and upland plant communities. Trail guides are at the trailhead.

Twelvemile Beach. This isolated beach is great for long walks and picking about the flotsam carried to shore by Lake Superior storms.

Hurricane River. The Hurricane River is frequented by early season fishing enthusiasts in search of steelhead trout.

Au Sable Light Station. The National Park Service is currently renovating this picturesque station. On a stormy day, one may get a sense of the history here and understand why this light station is preserved. Access to

the station is by a 1.5-mile trail beginning at the east end of the lower Hurricane River campground.

Log Slide. Legend has it that logs sent down the dry log chute would generate enough friction to cause the chute to catch fire. Today the chute is gone, but the lumberjack stories still linger as visitors gaze out over the Grand Sable Banks and dunes. This is a good place to see the Au Sable Light Station to the west and the Grand Sable Banks and Grand Marais to the east.

Grand Sable Banks and Dunes. The huge dunes were left by enormous retreating glaciers. Walking among the shifting sands with distant views of the lake is invigorating. About 60% of national lakeshore visitors go to the Grand Sable area.

Grand Sable Lake. Fishing and boating are favorite activities at Grand Sable Lake, which is at the foot of the Grand Sable Dunes. A picnic area and overlook on the north shore offer views of the landscape. Boat access is by a boat ramp on the south shore.

Sable Falls. A short hike from the parking lot leads to the falls and Sable Creek as it winds its way to Lake Superior. Another trail from the parking lot leads to the Grand Sable Dunes.

Activities

Commercial Tours. One of the easiest ways to see the Pictured Rocks is to take one of the commercial boat tours on Lake Superior. The tours, which run on a daily basis from late May to early October, leave from the Munising city dock. Excursions allow spectacular lake views of famous lakeshore features — Grand Island, Miners Castle, Grand Portal Point, and Chapel Rock. Sea kayak guided tours are available in Munising, and the national lakeshore is a favorite destination for backpacking tours. In addition,

two air tour companies operate out of Munising and Grand Marais.

Boating, Canoeing, and Sea Kayaking. Beaver Lake, Little Beaver Lake, and Grand Sable Lake are favorites for small boats and canoes. Most rivers are too shallow for canoeing. Lake Superior can be rough and small craft are easily swamped. Munising and Grand Marais have launch ramps for motorboats. Backcountry permits are required for overnight sea kayakers and boaters. Boat motors are limited to a maximum of 10 hp on the Beaver Lakes and 50 hp on Grand Sable Lake.

Hiking and Backpacking. With numerous trails in the national lakeshore, visitors can choose short or long, easy or vigorous trails that provide spectacular vistas of the lake, cliffs, dunes, and waterfalls. The North Country National Scenic Trail is one of only eight national scenic trails in the nation, and when it is completed it will be the longest hiking trail in the nation (4,200 miles).

The North Country National Scenic Trail links outstanding scenic, natural, recreational, historic, and cultural areas in seven of the northern states. From the grandeur of the Adirondack Mountains in New York, it meanders westward through the hardwood forests of Pennsylvania, through the countryside of Ohio and southern Michigan, along the shores of the Great Lakes, and through the glacier-carved forests, lakes, and streams of northern Wisconsin and Minnesota. Its western terminus lies in the vast plains of North Dakota. In Pictured Rocks National Lakeshore, the 42.8-mile lakeshore trail along the rock bluffs and sandy shore of Lake Superior (between Munising and Grand Marais), which provides outstanding vistas as well as primitive camping and hiking experiences, is a component of the North Country National Scenic Trail

Snowmobiling. Snowmobiles are restricted to roads that are open to vehicles in the summer.

Snowmobilers often pass through the national lakeshore as part of a larger loop tour.

Hunting and Trapping. Hunting is a time-honored tradition in the national lakeshore. The habitat supports many harvestable species, such as bear, whitetail deer, snowshoe hare, grouse, ducks, and geese. Hunting closure areas have been designated for public safety reasons. The courts have determined that under existing law trapping is not a permissible activity on NPS lands and waters. Trapping is allowed on state and private lands in the inland buffer zone.

Fishing. Favorite catches include smallmouth bass, northern pike, walleye, brook and lake trout, whitefish, steelhead, and coho salmon. Ice fishing is popular on Munising Bay and most inland lakes.

NOISE

The primary sources of noise include snowmobiles, logging vehicles and chainsaws, air tours, motorboats, and the public address system on tour boats. Vehicles on national lakeshore roads generate some noise but do not present a major source of disturbance to visitors.

SCENIC CHARACTER OF COUNTY ROAD H-58

County Road H-58, which is owned and maintained entirely by Alger County, is the primary artery for year-round access to the national lakeshore. The character of the road varies by location due to the nature of the roadbed, construction, and maintenance of the road. It was constructed primarily as a logging road, but use by national lakeshore visitors has grown since the establishment of the national lakeshore in the mid-1960s. Paved roads emanating from H-58 include Sand Point, Carmody (except the east-west portion), Miners Castle, and Monette roads;

the Little Beaver Lake campground and Log Slide roads are improved gravel, and the Chapel and Beaver Basin overlook roads are unimproved gravel.

From Munising east to the Little Beaver campground road, H-58 is good quality asphalt pavement posted for travel at 55 mph. Straight sections interspersed with winding curves characterize the drive on this portion. From Munising to H-15 numerous residences are seen, but they are interspersed with forested tracts. There is little residential development along much of this section of the road beyond the junction with H-15.

From Little Beaver campground road east to the Kingston Corner then north to the edge of the Kingston Plains, the road is a wide, improved gravel surface. Except for the open section through the Kingston Plains, this section is through a mature hardwood forest with a closed canopy. Fugitive dust is sometimes a problem for visitors during dry conditions. Appropriate speeds for vehicles traveling this section are 30-35 mph.

From the northern edge of the Kingston Plains to Log Slide, the road is a narrow, winding, primitive, sand and gravel road. The surface requires frequent grading to maintain a suitable driving surface. Depending on the maintenance schedule performed by the Alger County Road Commission crews, this section of the road can become like a washboard, with large potholes in the sand. Gravel fill has been added to many of these potholes during the past few years. Appropriate speeds for vehicles traveling this section are 25-30 mph. Most of the road is under a canopy of northern hardwoods, except for a clear-cut portion of Lake Superior State Forest near the national lakeshore's Twelvemile Beach campground. Residential development is limited to a few seasonal cabins in the section between Grand Sable Lake and Hurricane River.

From Log Slide to Grand Marais H-58 is asphalt similar in design standards to H-58 in the western portion of the national lakeshore.

Within the H-58 corridor, adverse impacts on visual quality are relatively few. Logging is a relatively minor problem, because visitors generally do not drive through logged areas. Housing is primarily limited to the section of H-58 between Grand Sable Lake and Hurricane River and west of Kingston Corner. From visitor surveys, it is clear that most visitors see this road as a beneficial attribute to visual quality and to the visitor experience. County Road H-58 sets the stage for both Twelvemile Beach and Hurricane River campgrounds, which are small, quiet, informal, and intimate.

In general, visitors have expressed a preference for maintaining this road's relatively narrow, curvy character that compels passengers to drive slowly and experience their surroundings in an intimate, detailed way. Visitors especially value the way the road's narrow width allows the forest to close over the top in places, creating a canopy effect. Some people do not care about the road's scenery and would prefer a wider, faster route between Munising and Grand Marais. In the no-action alternative H-58 would probably be maintained as is, so scenic qualities that are valued by many visitors would be preserved.

OPPORTUNITIES FOR PEOPLE WITH DISABILITIES

In general, roads and developments at the eastern and western ends of the national lakeshore are fairly modern. These new facilities provide excellent access for the elderly and the people with disabilities. However, there has been concern that access to the more primitive center of the national lakeshore is denied to these visitors. Almost 13% of nonhikers who did not visit the Twelvemile Beach area said they were

prevented by a lack of physical ability. However, this perceived barrier is not related to the lack of modern development or access for visitors with disabilities. No spot in the national lakeshore is more modern or accessible than Munising Falls, yet 10% of the non-hikers say they did not have the physical abilities to visit this end of the national lakeshore.

The Pictured Rocks National Lakeshore/Hiawatha Forest Service Visitor Information Center in Munising, the Munising Falls interpretive center, and the Grand Sable visitor center are all wheelchair accessible. Miners Castle overlook and Miners Beach and each of the drive-in campgrounds are also wheelchair accessible.

Outdoor lakeshore attractions that are accessible to visitors with disabilities include Munising Falls, the Sand Point marsh walk and beach, Miners Castle overlook, Miners Beach, Little Beaver Lake campground, and Twelvemile Beach and Hurricane River campgrounds.

National lakeshore headquarters at Sand Point is not accessible to people in wheelchairs. The Sand Point Marsh Trail, a 0.5-mile interpretive trail, features a large print brochure for visually impaired visitors.

NATIONAL LAKESHORE OPERATIONS AND FACILITIES

OPERATIONS

Pictured Rocks National Lakeshore is administered by a superintendent with the assistance of five division chiefs. Because of the size of the national lakeshore, the operations are split between two districts – the east (Grand Marais) and west (Munising) districts. Most of the staff (27 full-time-equivalent positions) is stationed at national lakeshore headquarters in the former Sand Point Coast Guard Station in Munising. The Munising Range Light Station is being used for NPS administrative purposes. A small number of maintenance, visitor services, and law enforcement personnel are stationed at the east end of the national lakeshore at Grand Marais. Several seasonal employees and volunteers augment the permanent national lakeshore staff each summer. These seasonal positions include, for example, maintenance workers who paint historic buildings, park rangers who guide lighthouse tours, visitor use assistants in visitor centers, and aquatic and mammal researchers.

The management of the national lakeshore is organized into the following divisions:

Administration. This division provides coordination, guidance, and is responsible for the national lakeshore's budget, fiscal, and real property management activities. All contracting and purchasing for the national lakeshore is conducted through this division. They also have responsibility for housing management and overseeing fee collection operations in the national lakeshore.

Interpretation and Cultural Resources. This division is responsible for interpretive programming, education outreach, visitor center and cooperating association bookstores, and personal and nonpersonal services such as the park web site, publications, exhibits, and the volunteer in parks program management. The

Grand Sable Visitor Center, the Grand Marais Maritime Museum, and the Pictured Rocks/Hiawatha National Forest visitor information center in Munising and the Miners Castle information center northeast of Munising are maintained by this division. The division also maintains the museum collection, which includes several thousand artifacts. Artifacts in the collection include items that are related to the maritime use of the area, archeological sites, vegetation/natural resources, logging, and fishing.

Visitor Services and Land Management. This division is responsible for monitoring and documenting development on lands within the inland buffer zone and administering commercial licenses and special use permits. The division is also responsible for public and employee safety, law enforcement and criminal investigation, wildland fire preparedness, front- and backcountry management and patrol, and search and rescue.

Maintenance. This division is responsible for the operation and maintenance of all national lakeshore facilities and equipment including utilities (water, wastewater, power, and solid waste), administrative and historic structures and grounds, front- and backcountry visitor use areas, trail systems, campgrounds, picnic areas, roads, and national lakeshore signs and vehicles. The division is also engaged in an active sustainable environmental practices program.

Science and Resource Management. This division is responsible for the direction and coordination of social and natural science research, day-to-day resource management projects, NEPA compliance issues, and national lakeshore GIS data.

FACILITIES

NPS- owned facilities serving visitors and supporting management operations are centered in the Munising area in the west district and in the Grand Marais area in the east district of the national lakeshore. Visitor service facilities include four information centers, an interpretive center, a museum, and wayside exhibits; the national lakeshore also shares a visitor information center with the Forest Service in Munising. The National Park Service manages roads to and trails at principal attractions at Munising Falls, Miners Castle and beach, and Sable Falls. Three drive- in campgrounds (67 sites) are in the central core of the national lakeshore, and a system of backcountry campgrounds (13) is in place throughout the national lakeshore. These campgrounds are connected by a system of trails (84 miles) including a segment of the North Country National Scenic Trail.

Principal vehicular access to and through the park to its facilities and attractions is provided by Alger H- 58 (county owned) and spur roads owned by Alger County and the National Park Service (total of 38 miles of road, 8 miles paved). Former U.S. Coast Guard stations serve as the administrative headquarters for the national lakeshore — at Sand Point in the west district and at Grand Marais in the east district (including offices, a ranger station, seasonal dormitory, and a maritime museum). There are maintenance facilities in both districts, with a recently (1995) constructed facility in Munising.

The condition of the National Park Service facilities is generally good, although some have begun to deteriorate in the absence of adequate funds to provide routine maintenance and needed repairs.

OPERATIONAL EFFICIENCY AND EMERGENCY RESPONSE TIME

The operational efficiency of the national lakeshore is not optimal. Except for the recently completed Munising maintenance facility, operations functions are housed in historic structures that are being adaptively used. The headquarters function is in the historic (former) Sand Point Coast Guard Station. Office and storage space is limited, utilities are substandard, and the building is not accessible to visitors with disabilities. The staff has increased and can no longer be accommodated at the Sand Point headquarters. A portion of the headquarters staff is being relocated from the Sand Point Coast Guard Station to the Munising Range Light Station in Munising until the new national lakeshore administration building is completed on County Road H- 58. The separation of staff on the west end in three different locations (Sand Point, Munising, and the maintenance facility) is highly inefficient.

The east- end maintenance facilities are in a converted garage and construction trailer. The space is inadequate, it is not accessible to people with disabilities, and the utilities and conditions are substandard.

Emergency response time is good throughout the national lakeshore in areas served by paved portions of H- 58. Because sand and gravel roads dictate slower speeds for safety reasons, the remainder of the national lakeshore has a somewhat slower emergency response time.

ADMINISTRATIVE ACCESS TO MUSEUM COLLECTION

Standards for collection, preservation, management, and long- term care of national lakeshore museum collections are found in NPS- 28 and the automated checklist program (ACP) within the automated national catalog system (ANCS). In fiscal year 97 (the national

lakeshore's baseline), there were 449 deficiencies, which were noted in the 1994 ACP. National lakeshore staff have been able to eliminate 43 deficiencies in fiscal years 1999 and 2000, however, limited display and

substandard storage areas for the national lakeshore's collections continue to limit convenient staff and researchers' access to the collection.

Chapter 4

ENVIRONMENTAL CONSEQUENCES



INTRODUCTION

The National Environmental Policy Act (NEPA) requires that environmental documents discuss the environmental impacts of a proposed federal action, feasible alternatives to that action, and any adverse environmental effects that cannot be avoided if a proposed action is implemented. In addition, the effects on historic properties are considered in accordance with the National Historic Preservation Act (NHPA). The following portion of this document analyzes the environmental impacts of the five alternatives on cultural resources, natural resources, the socioeconomic environment, the visitor experience, and national lakeshore operations. The analysis is the basis for comparing the beneficial and adverse effects of implementing the alternatives.

During the development of the alternatives, the planning team tracked the placement of each of the management prescriptions within the national lakeshore and documented the reason for selecting the particular management prescription. The desired visitor experience and resource condition from the management prescription was then compared to the existing condition. The changes needed to move from existing conditions toward desired conditions were then identified. These changes helped the planning team identify the impacts to be evaluated for each of the alternatives and helped evaluate the impacts of applying the management prescriptions.

Because of the general, conceptual nature of the actions described in the alternatives, the impacts of these actions can only be analyzed in general terms. Thus, this environmental impact statement should be considered a programmatic analysis. If and when specific developments or other actions are proposed subsequent to this *General Management Plan*, NPS staff will determine whether more detailed environmental and cultural

documentation is needed in accord with NEPA and NHPA requirements.

This chapter begins with a description of the methods and assumptions for each topic. Impact analysis discussions are organized by alternative and then by impact topic under each alternative. Each alternative discussion also details cumulative impacts and presents a conclusion.

The NPS National Environmental Policy Act guideline (Director's Order 12) presents an approach to identifying the duration (short or long term), type (adverse or beneficial) and intensity or magnitude (negligible, minor, moderate, or major) of the impact(s). That approach has been used in this document. Where duration is not noted in the impact analysis, it considered long term. Direct and indirect effects caused by an action were considered in the analysis. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later in time or farther removed from the place, but are still reasonably foreseeable.

Mitigating actions would be taken during implementation of the alternatives. All impacts have been assessed assuming that mitigating measures have already been implemented.

There are plans by other organizations and agencies (see Appendix F: "Relationship to Other Planning Efforts") that could also affect the national lakeshore's natural and cultural resources as well as the socioeconomic conditions. The National Park Service is aware of these plans, and is working in coordination with these other efforts. If they exist, the cumulative impacts of NPS actions as well as actions by others are included in the impact analysis for each alternative.

CUMULATIVE IMPACTS

A cumulative impact is described in the Council on Environmental Quality's regulation 1508.7 as follows:

Cumulative impacts are incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other action. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

To determine potential cumulative impacts, projects within the area surrounding Pictured Rocks National Lakeshore were identified. The area included Alger County, the northern portion of Schoolcraft County north of M- 28, and nearby lands administered by the U.S. Fish and Wildlife Service, U.S. Forest Service, and the state. Information about projects was obtained by phone calls with county and town governments and federal land managers. Potential projects identified as cumulative actions included any planning or development activity that had been completed in the past, was currently being implemented, or would be implemented in the reasonably foreseeable future. Representatives of the U.S. Fish and Wildlife Service, U.S. Forest Service, and the state did not believe their activities would contribute to the cumulative impact scenario.

These actions are evaluated in conjunction with the impacts of each alternative to determine if they have any cumulative effects on a particular natural, cultural, visitor use, or social resource. Because most of these cumulative actions are in the early planning stages, the evaluation of cumulative impacts was based on a general description of the project.

Past Actions

Residential Development. The construction of minimum and medium security prisons near Munising created 300 new jobs. This raised the demand somewhat for new home construction in an area that had previously been static or declining in population.

Munising Marina. The marina extended the L- dock 300 feet and added 112 slips to support local and transient boater needs. The only other marinas to support boater needs in this area are in Grand Marais and Marquette.

The L- dock was repaired, and 85,000 cubic yards of material was dredged inside the L- dock. This project was completed in summer 2001.

Present Actions

Residential Development. Most of the current development is for seasonal dwellings. These are used as hunting base camps, and some are even winterized and used for rentals to snowmobilers. It is anticipated that even at the current rate of development, because of county and township zoning regulations, the rural character of the area will continue.

Alger County Roads. Alger County will pave H- 58 from Log Slide east to Grand Sable Lake with funds available from the TEA- 21 legislation (Transportation Equity Act for the 21st Century). All other roads in the county will remain at the existing level of service.

Winter Use. The tourist season used to be from June through September. Because of the large amount of snow from the lake effect (305 inches in the winter of 2000- 2001) snowmobiling, and to a lesser extent dog sled racing, now draws tourists to the area in large numbers in December through March.

Future Actions

Munising Tourist Park. Plans for the park include extending water lines to support the construction of a pavilion and additional campsites.

Munising Infrastructure. The city government is working to develop a comprehensive water and sewer system to support future city growth. A five- year plan has been prepared to direct the street and sidewalk program.

Alger County Roads. Long- range plans are to pave H- 58 from Little Beaver Lake campground road east to the Log Slide road the entire length of the national lakeshore. The implementation of these plans is dependent upon funding. All other roads in the county will remain at the existing level of service.

IMPAIRMENT OF NATIONAL LAKESHORE RESOURCES

In addition to determining the environmental consequences of implementing the preferred and other alternatives, NPS policy (*Interpreting the National Park Service Organic Act, National Park Service Management Policies*) requires analysis of potential effects to determine whether or not actions would impair site resources and values. An evaluation of impairment is not required for topics related to visitor use and experience, NPS operations, or the socioeconomic environment.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park/national lakeshore resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park/national lakeshore resources and values. However, the laws do give the National Park Service the management discretion to allow impacts on park/national lakeshore resources and values

when necessary and appropriate to fulfill the purposes of a the park/national lakeshore, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within a park/national lakeshore, that discretion is limited by the statutory requirement that the National Park Service must leave resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of national lakeshore resources and values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact on any national lakeshore resource or value may constitute an impairment. An impact would be more likely to constitute an impairment to the extent it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the national lakeshore, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the national lakeshore. A determination on impairment is made in the "Environmental Consequences" section in the conclusion section for each required impact topic related to the park's resources and values. When it is determined that an action(s) would have a moderate to major adverse effect, a justification for nonimpairment is made. Impacts of only negligible or minor intensity would by definition not result in impairment.

METHODS AND ASSUMPTIONS FOR ANALYZING IMPACTS

This section presents the methods used to conduct the environmental impact analyses. Each resource topic area includes a discussion of the impact assessment and the intensity, duration, and type of impact. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. The duration of the impact considers whether the impact would occur in the short term (temporary) or the long term (permanent). The type of impact considers whether the impact on the environment would be beneficial or adverse.

Pursuant to National Environmental Policy Act (NEPA) requirements, the impact analyses for the no- action alternative compare resource conditions in the year 2018 to existing conditions in 2003. The impact analysis for the action alternatives (the preferred alternative and alternatives A, C, and E) compare the action alternative in the year 2018 to the no- action alternative in the year 2018. Said differently, the impacts of the action alternatives describe the *difference between* implementing the no- action alternative and implementing the action alternative. To understand a complete “picture” of the impacts of implementing any of the action alternatives, the reader must also take into consideration the impacts that would occur under the no- action alternative.

CULTURAL RESOURCES

Regulations and Policies

This impact analysis applies to five basic types of cultural resources: archeological sites, historic structures, cultural landscapes, ethnographic resources, and museum collections.

Section 106 of the National Historic Preservation Act requires a federal agency to take into account the effects of its undertakings on

properties included on, or determined eligible for inclusion on, the National Register of Historic Places and to provide the Advisory Council on Historic Preservation reasonable opportunity to comment. This also applies to properties not formally eligible but that are considered to meet eligibility criteria. All NPS planning and undertakings affecting historic properties are subject to the provisions of the 1995 programmatic agreement developed among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers. Applicable legislation and regulations and specific management procedures regarding cultural resources are detailed in the National Park Service’s *Cultural Resource Management Guideline*, Director’s Order No. 28, Release No. 5, 1998.

The methods for assessing impacts on historic resources is based on the regulations of the Advisory Council on Historic Preservation (36 CFR 800) implementing Section 106. These methods include: (1) identifying areas that could be impacted; (2) comparing that location with that of resources listed, eligible, or potentially eligible for listing on the National Register; (3) identifying the extent and type of effects; (4) assessing those effects according to procedures established in the Advisory Council’s regulations; and (5) considering ways to avoid, reduce, or mitigate adverse effects as described in the “Mitigation” section in chapter 2.

Cultural resource impacts in this document are described in terms that are consistent with the regulations of the Council on Environmental Quality (CEQ), and in compliance with the requirements of both the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act.

Terms for Assessing the Impacts

Duration of Impact. Impacts on historic properties (cultural resources) could be of short- term (one year or less), or long- term (more than one year). One year was selected for short term since renovations to historic structures usually take one year or less to complete. Anything beyond one year is considered long- term.

Type of Impact. The analysis section provides a detailed analysis of the type of impacts that would or could result from implementing the actions proposed in each alternative. The conclusion section summarizes the key points or results of the analysis.

When analyzed under the National Environmental Policy Act and the National Park Service's NEPA guideline (DO- 12), an impact on historic properties (cultural resources) is either adverse or beneficial. This effect can be partially or completely mitigated, and the reduction in intensity from applying mitigation efforts is an estimate of the effectiveness of mitigation. The cultural resources portion of the environmental consequences section for each alternative includes an analysis and conclusion that uses NEPA terminology.

Additionally, under the National Historic Preservation Act (Section 106), an impact on historic properties is either adverse or not adverse. Adverse effects under Section 106 may also be partially or completely mitigated; however, unlike NEPA analysis, the effect cannot be reduced and remains an adverse effect. To comply with this difference in terminology for Section 106, an additional "Section 106 Summary" discussion has been added for each subheading under the impacts on cultural resources for each alternative. The required determination of effect for the undertaking (implementation of the alternative) is included in the "Section 106 Summary" sections for each alternative.

Effects under both the National Environmental Policy Act and the National Historic Preservation Act are considered adverse when they diminish the significant characteristics of a historic property.

Intensity of Impact. The intensity of an impact on a cultural resource can be defined as negligible, minor, moderate, or major. Negligible impacts would be barely perceptible changes in significant characteristics of a historic property. Minor impacts would be perceptible, noticeable, and localized and confined to a single element or significant characteristic of a historic property (such as a single archeological site containing low data potential within a larger archeological district or a single contributing element of a larger historic district). Moderate impacts would be perceptible, noticeable and would affect several elements or significant characteristics of a historic property. Major impacts would result in substantial and highly noticeable changes in significant characteristics of a historic property.

NATURAL RESOURCES

Regulations and Policies

The National Park Service is committed to minimizing wetland loss. The wetland protection mechanisms used by the National Park Service include Executive Order 11990, "Protection of Wetlands"; Director's Order 77- 1, "Wetland Protection," and its accompanying Procedural Manual 77- 1; Clean Water Act Section 404; and the "no net loss" goal outlined by the White House Office on Environmental Policy in 1993. Executive Order 11990 requires that leadership be provided by involved agencies to minimize the destruction, loss, or degradation of wetlands. NPS Director's Order 77- 1 and Procedural Manual 77- 1 provide specific procedure for carrying out the executive order.

Species of Concern

The National Park Service consulted with the U.S. Fish and Wildlife Service (1999) and Michigan Department of Natural Resources to obtain the most recent list of species of concern, including threatened or endangered species at the federal and state levels. The Michigan Department of Natural Resources (1999) provided a list of occurrences for both federal and state species of concern. Recorded locations for identified species were compared with management or activities identified in each alternative to determine the likelihood of impact. As specific plans are developed, surveys may be required, and consultation with the U.S. Fish and Wildlife Service, or Michigan Department of Natural Resources, as appropriate, will be initiated.

The impact evaluation for wildlife species of concern for each alternative is based on the following: (1) the possibility of a species or its preferred habitat types occurring in areas expected to be affected; (2) the direct loss of habitat; (3) the partial loss of habitat from modification; and (4) the species' sensitivity to disturbance from human activities that may cause it to abandon currently occupied habitat or deter it from occupying suitable habitat.

Habitat fragmentation is also a critical factor for special- status species. Restored blocks of habitat should be large enough to support viable populations, and intact habitat should not be reduced or affected to the point that it would no longer support viable populations.

The assessment of potential impacts on species of concern is based on comparisons between the alternatives to the no- action alternative. Impacts have been evaluated considering species' sensitivity to impacts (based on rarity, resilience, size of population, and extent of species throughout the national lakeshore); location of species in proximity to disturbance; and mitigation applied as appropriate for the species and the site.

Duration of Impact. The expected duration of impacts is described as long term or short term. The duration of the impacts would depend to some degree on how easily impacts could be mitigated. Loss of a population of plants that could not be easily mitigated by reintroduction would be long term, while impacts that could be mitigated easily would be short term. Short term impacts would generally lead to recovery in three years or less; long- term impacts would take more than three years to attain recovery, if at all.

Intensity of Impact. The intensity and magnitude of impacts on species of concern have been described as negligible, minor, moderate, or major. Negligible impacts would be barely perceptible or detectable regardless of the size of the area affected. Minor impacts would affect a few individuals or have very local impacts on habitat and would not affect the viability of species. Moderate impacts would cause measurable effects on: a moderate number of individuals within a population, the dynamics among a number of species in a system, or a large area of habitat or important habitat attributes. Major impacts would lead to extirpating a local population or jeopardize the continued existence of a species.

Type of Impact. The type of impact refers to whether an impact is adverse or beneficial. Impacts were classified as adverse if they reduce the species' population or habitat size, continuity, or integrity. Conversely, impacts were classified as beneficial if they increase population or the size, continuity, or integrity of habitat.

WILDERNESS RESOURCES AND VALUES

The National Park Service compared the management prescriptions for each alternative with the wilderness criteria identified in the Wilderness Act to determine how those values might be affected.

Duration of Impact. A short-term impact would last less than five years following the implementation of an alternative. A long-term impact would last longer than five years after implementing the alternative.

Intensity of Impact. The intensity and magnitude of impacts on wilderness values have been described as negligible, minor, moderate, or major. Negligible impacts would have no discernable effect on wilderness values. Minor impacts would be detectable and affect a limited area that meets wilderness criteria. Moderate impacts would be sufficient to cause a change in the wilderness resource values and they would be readily apparent. Major impacts would substantially alter the wilderness values, eliminating the characteristics that meet the criteria for consideration as wilderness.

Type of Impact. Impacts were classified as adverse if they would adversely affect wilderness values or integrity. Conversely, impacts were classified as beneficial if they would enhance wilderness values or integrity.

SOCIOECONOMIC RESOURCES

The National Park Service applied logic, experience, professional expertise, and professional judgment to analyze the impacts on the social and economic situation resulting from each alternative. Economic data, historic visitor use data, expected future visitor use, and future developments of the national lakeshore were all considered in identifying, discussing, and evaluating expected impacts.

Assessments of potential socioeconomic impacts were based on comparisons between the no-action alternative and the four action alternatives.

Duration of Impact. The evaluation of impacts also included an assessment of duration. Distinguishing between short-term and long-term duration was necessary to under-

stand the extent of the identified effects. In general, short-term impacts are temporary and typically are transitional effects associated with implementation of an action (e.g., related to construction activities) and are less than one year. In contrast, long-term impacts have a permanent effect on the socioeconomic environments and their effect extends beyond one year (e.g., operational activities).

Intensity of Impact. The intensity of each impact was rated in terms of increasing severity, as negligible, minor, moderate, or major. Negligible impacts are effects considered barely detectable and are expected to have a barely discernible effect on the socioeconomic environment. Minor impacts are slightly detectable and are not expected to have an overall effect on the character of the socioeconomic environment. Moderate impacts are detectable, without question, and could have an appreciable effect on the social and economic environment. Major impacts are considered to have a substantial, highly noticeable influence on the socioeconomic environment and could be expected to alter that environment permanently. In addition, impacts are recognized as indeterminate if the intensity of their effects on the socioeconomic environment could not be readily identified.

Type of Impact. Impacts were recognized as beneficial if they would improve on characteristics of the socioeconomic environment as it relates to local communities, regional economies, and visitors. Conversely, impacts were considered adverse if they would degrade or otherwise adversely alter the characteristics of the environment in these areas.

VISITOR USE AND EXPERIENCE

This impact analysis considers various aspects of visitor use and experience at Pictured Rocks, including opportunities for recreational activities, access to significant national lakeshore features, noise, the scenic character of County Road H-58, and opportunities for people with disabilities. The analysis is based

on how visitor use and experiences would change with the way management prescriptions were applied in the alternatives. The analysis is primarily qualitative rather than quantitative due to the conceptual nature of the alternatives.

Impacts on visitor use and experience were determined considering the best available information regarding visitor use and experience. Information on visitor use and visitor opinions was taken primarily from a survey of 863 visitors conducted in the summer of 1990 (Pitt, Lime, and Vlaming 1991). This information was supplemented by data gathered during this planning process, including opinions from Pictured Rocks visitors and neighbors and information provided by national lakeshore staff.

Duration of Impact. A short-term impact would last less than one year and would affect only one season's use by visitors. A long-term impact would last more than one year and would be more permanent in nature.

Intensity of Impact. Impacts were evaluated comparatively between alternatives, using the no-action alternative as a baseline:

- Negligible: the impact is at the lower levels of detection.
- Minor: the impact is slight, but detectable.
- Moderate: the impact is readily apparent.
- Major: the impact is severely adverse or exceptionally beneficial.

Type of Impact. Adverse impacts are those that most visitors would perceive as undesirable. Beneficial impacts are those that most visitors would perceive as desirable.

NATIONAL LAKESHORE OPERATIONS AND FACILITIES

Impacts for each action alternative were evaluated by assessing changes to operations

that would be required to meet various operational requirements outlined in each of the action alternatives. These effects were compared to existing operations that are described in the no-action alternative.

The discussions of impacts are for those operations that would be new, undergo major operational change, or show susceptibility to increases or decreases in operational activity. For most daily and programmatic activities, the action alternatives would have negligible effects, i.e., there would not be a measurable change or difference in operations. These activities were generally not included in the analysis. For example, keeping a picnic area at the same size, serving the same types of user groups, and with the same types of facilities would have negligible effects on campground maintenance operations, and thus was not included in the analysis.

Duration of Impact. Short-term impacts would be less than one year since most construction is generally completed within a year's timeframe and would last only until all construction-related action items are completed. Long-term impacts would extend beyond one year and have a permanent effect on operations.

Intensity of Impact. With negligible impacts, there would not be a measurable difference in costs from existing levels. With minor impacts, measurable additions or reductions in cost would be less than 15% of existing levels. With moderate impacts, additions or reductions in cost would be between 15% and 30% of existing levels. With major impacts, additions or reductions in cost would exceed 30% of existing levels.

Type of Impact. Adverse impacts represent an increase in operating costs. Beneficial impacts represent a decrease in operating costs.

IMPACTS OF THE NO- ACTION ALTERNATIVE

IMPACTS ON CULTURAL RESOURCES

Archeological Sites

Under the no- action alternative, there would be no project or construction- related ground disturbance with the potential to impact known archeological resources.

Cumulative Impacts. An archeological site could possibly be disturbed/exposed/ impacted by human activity (such as residential development, recreational activities, logging, or artifact hunting) or natural processes (such as erosion or vegetation loss). The possibility of ground disturbance and exposure would be most likely at readily accessible locations such as Miners Beach, Hurricane River, Grand Sable Lake, Little Beaver Lake, and several backcountry locations. The site would be protected to the extent possible, depending on staffing and funding levels. The loss would be mitigated by data recovery (salvage archeology), which would be done in consultation with the tribes and state historic preservation officer (see “Mitigation” section). The resulting impact on such sites would be anticipated to be adverse, long term, and minor (at a site with low data potential) to moderate (at a site with greater data potential). No past, present, or reasonably foreseeable future actions by the National Park Service under this alternative would be expected to combine with the impacts just described to result in cumulative impacts on archeological sites under the no- action alternative.

Conclusion. Under the no- action alternative, there would be no project or construction- related ground disturbance with the potential to impact known archeological resources.

There would be no impairment of archeological sites.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would not result in adverse effects on archeological sites.

Historic Structures

Continuing, as funding and staffing permit, the

- protection of the Schoolcraft Furnace site and kilns (a national- register listed property),
- preservation treatment and extensive rehabilitation of main building exteriors, renovation of main building interiors, and adaptive use at the Au Sable Light Station (as funding and staffing permit) of the Au Sable Light Station (a national- register listed property), and
- preservation treatment of the four properties determined eligible for listing (Sand Point and Grand Marais Coast Guard Stations, Munising Range Light Station, and Grand Marais Harbor of Refuge quarters)

would help protect their documented architectural values (in compliance with the *Secretary’s Standards for Historic Structures*). Preservation work could result in the loss of some historic fabric, a long- term minor adverse impact because the changes would be minimal. Overall, there would be a minor long- term beneficial impact on these historic structures because the preservation work (consistent with an ongoing historic preservation and maintenance program) and adaptive use would maintain the values that made these properties eligible/possibly eligible for listing on the National Register of Historic Places and would ensure the maintenance and preservation of the buildings.

Continued seasonal guided tours at the Au Sable Light Station could result in some loss of historic fabric – a long- term negligible to minor adverse impact because the potential for damage is low. Continuing to lease the Grand Marais Harbor of Refuge keepers quarters to the Grand Marais Historical Society and use of the Abrahamson Farm barn for storage would require continued preservation and maintenance of the buildings, a long- term, minor, beneficial impact.

Cumulative Impacts. No past, present, or reasonably foreseeable future actions by others under this alternative would be expected combine with the actions described above to result in cumulative impacts on archeological sites under the no- action alternative.

Conclusion. Actions under this alternative would generally have a minor long- term beneficial impact on the Schoolcraft Furnace site, the Au Sable Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, the Munising Range Light Station (national register and national register- eligible properties), and the Abrahamson barn because the preservation work (consistent with an ongoing historic preservation and maintenance program) and adaptive use would maintain the values that made these properties eligible/possibly eligible for listing on the National Register of Historic Places and would ensure the maintenance and preservation of the buildings.

There would be no impairment of historic structures.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would not result in overall adverse effects on certain historic properties listed on or eligible for

listing on the National Register of Historic Places.

Cultural Landscapes

Without documentation and active management of cultural landscapes that might be determined eligible for listing on the national register (including those associated with the Au Sable Light Station, the Abrahamson and Becker Farms, the Sand Point and Grand Marais Coast Guard Stations, Munising Range Light Station, and the Grand Marais Harbor of Refuge quarters), these landscapes would not reflect their periods of significance, a minor long- term adverse impact because visitors can still see the resources and get a feel for what it must have been like during those periods.

Without active management, woody vegetation would encroach on abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas, resulting in a more closed- in appearance and eventual change to a more wooded scene. This would result in the loss of landscapes associated with and farming or other agricultural activities. The potential loss of some of these remaining landscapes in the national lakeshore would have a minor long- term adverse impact on these cultural landscapes, and relatively few would be left.

Cumulative Impacts. No past, present, or reasonably foreseeable future actions by others under this alternative would be expected combine with the actions described above to result in cumulative impacts on cultural landscapes under the no- action alternative.

Conclusion. There would be long- term moderate adverse impacts on cultural landscapes associated with the Au Sable Light Station, the Abrahamson and Becker Farms, Sand Point and Grand Marais Coast Guard Stations, Munising Range Light Station, and

Grand Marais Harbor of Refuge quarters because no active management is taking place due to a lack of documentation.

Woody vegetation would encroach in areas of abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas, resulting in the eventual loss of landscapes associated with farming or other agricultural activities — a minor long- term adverse impact on these cultural landscapes, and relatively few would be left.

There would be no impairment of cultural landscapes.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would result in adverse effects on cultural landscapes associated with the Au Sable Light Station, Sand Point and Grand Marais Coast Guard Stations, and the Grand Marais Harbor of Refuge quarters as well as abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas.

Ethnographic Resources

Under the no- action alternative, there would be no project or construction- related ground disturbance with the potential to impact known ethnographic resources.

Native Americans desiring privacy for religious activities would continue to be disrupted occasionally by such things as the presence of other visitors who are hiking or camping and noise from visitor- related activities such as motorboats and tour boats. These conflicts would constitute a minor, short- term, reoccurring, adverse impact; however, conflicts would only be occasional. (Areas where impacts could occur include

high cliffs or promontories, river and creek mouths, inland lakes, Lake Superior, and the Grand Sable Dunes.)

Cumulative Impacts. No past, present, or reasonably foreseeable future actions by others under this alternative would be expected combine with the actions described above to result in cumulative impacts on ethnographic resources under the no- action alternative.

Conclusion. Under the no- action alternative, there would be no project or construction- related ground disturbance with the potential to impact known ethnographic resources. However, Native Americans would continue to be occasionally disrupted during religious activities, a minor, short- term, recurring adverse impact.

There would be no impairment of ethnographic resources.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would result in the continuation of adverse effects on ethnographic resources because Native Americans desiring privacy for religious activities would continue to be occasionally disrupted by visitor- related activities/noise.

Museum Collection

Under this alternative the museum collection would continue to be housed in substandard conditions at the Grand Marais Maritime Museum and Abrahamson barn. Thus, some items in the collection would continue to undergo slow deterioration, resulting in a long- term minor adverse impact on some objects. In addition to the substandard conditions, space to store and display the museum collection is inadequate and limits the staff’s and researchers’ abilities to protect,

recover, exhibit, interpret, or study the information contained in the collection. This results in a long-term moderate adverse impact on the accessibility of the collection to staff and researchers.

Cumulative Impacts. No past, present, or reasonably foreseeable future actions by others would be expected to combine with these actions and result in a cumulative impact on the museum collection under the no-action alternative.

Conclusion. The continuation of substandard storage and display conditions for the museum collection under this alternative would have a long-term minor adverse impact on some of the national lakeshore's museum collection. Limited access to the collection and lack of sufficient space to curate the collection would result in long-term moderate adverse impacts on staff and researchers.

There would be no impairment of the museum collection.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 "Assessment of Adverse Impacts"), the National Park Service finds that the selection of this alternative would result in adverse effects on some objects in the museum collection and on staff and researchers wanting access to the collection.

IMPACTS ON NATURAL RESOURCES

Species of Concern

The continuation of current use patterns, including motorized boats on the Beaver and Grand Sable Lakes, would likely have no discernable adverse effect on nesting bald eagles in those areas. This determination is based on the following observations: that the nests were established while boating has been occurring; the use of the lakes during the critical period is low; and the boat use

(fishing) occurs outside the tertiary buffer during critical periods (nesting, incubation, and brooding) (USFWS 1983). The nests are 0.25 mile or more away from these lakes, which is an acceptable distance to minimize the effect of human activity during nesting and fledging activity. Hiking occurs on a trail near one of the nests, but use during the critical periods is low, and the trail is outside the secondary buffer identified by the U.S. Fish and Wildlife Service (USFWS 1983).

Under the no-action alternative the National Park Service would continue to protect designated critical habitat for piping plover. No development would occur on the lakeshore-owned beach at Grand Marais, and no NPS action is foreseen to increase visitor use of the beach. National lakeshore regulations requiring pets to be leashed and prohibiting all terrain vehicle use would remain in effect. Piping plover critical habitat would benefit from cooperative efforts between the NPS staff and other cooperators, such as monitoring and protecting the beach, while implementing the piping plover recovery plan (USFWS 2003b).

Pitcher's thistle and other species of concern within the Grand Sable Dunes would continue to benefit from the area's management as a research natural area. The lack of development would discourage visitor use and would continue to provide a high degree of protection. The populations are stable and expected to remain so for the long term. Visitor use is very low, and no increase in visitor activity in the dunes would be expected. The benefit for Pitcher's thistle and other species of concern would be major and long term. Continued management of the Grand Sable Dunes as a research natural area would perpetuate the long-term major benefit for all species of concern within the area.

Continued use of two tracks (old logging roads) in the Beaver Basin would have a negligible impact on species of concern in the short or long term because the tracks do not

traverse habitats where species of concern are found. Use of areas where species of concern are found would continue to be very low. As a result, negligible impacts on species of concern in the Beaver Basin would be expected, either short or long term.

Wolf use would follow current patterns, influenced by population size, climate, and food availability. Habitat conditions in the national lakeshore would be influenced by natural processes and cycles and would not be expected to change drastically over the long-term, providing a potential benefit for the gray wolf. Implementing the no-action alternative would have no known impact on the gray wolf.

Cumulative Impacts. Consultation with Michigan Department of Natural Resources, the U.S. Forest Service, the U.S. Fish and Wildlife Service, and ForestLand Group, Limited Liability Corporation indicate that all agencies and entities implement policies that offer consideration and protection to species of concern in accord with federal and state law regarding threatened, endangered, or other species of concern. Such policy provides a potentially major long-term benefit for species of concern in the inland buffer zone and Alger and Schoolcraft Counties (and the state).

In Michigan, threatened and endangered species are protected on both public and private land. The Endangered Species Protection law states that an individual may not harm or take threatened and endangered species (Michigan Natural Resources and Environmental Protection Act 1994, part 365). It is the responsibility of the landowner to submit projects for review to determine if a threatened or endangered species is known to occur or has potential to occur within the project scope. Logging on state land is conducted under these guidelines. ForestLand Group, Limited Liability Corporation, management practices address species of concern as identified by the Michigan

Department of Natural Resources and the U.S. Fish and Wildlife Service. Such law provides a potentially major long-term benefit for species of concern in the inland buffer zone, and Alger and Schoolcraft Counties, (and the state).

Also, the U.S. Fish and Wildlife Service and the Michigan Department of Natural Resources conduct active management programs for the gray wolf in the Seney area, a major short- and long-term benefit for this species in the central Upper Peninsula.

Although the policies and laws mentioned above do not guarantee protection, they do serve as a deterrent to harming endangered species. In combination with federal laws that protect endangered species, overall cumulative effect is that species of concern would continue to be protected in the national lakeshore, a major short- and long-term benefit.

Conclusion. Continuing current management practices would perpetuate short- and long-term beneficial impacts for species of concern. Preserving Grand Sable Dunes as a research natural area would continue to provide a major long-term benefit for species of concern in that area by providing an environment with very limited use or disturbance. There would be no discernable adverse impacts on the bald eagle, Pitcher's thistle, the gray wolf, piping plover, designated piping plover critical habitat, or other species of concern expected if the no-action alternative was implemented. Species occurring north of the inland buffer zone elsewhere in the lakeshore would continue to benefit from federal (NPS) protection. Species on state lands are afforded protection through review and management. Species on corporate and privately owned land are subject to state law and require review by the Michigan Department of Natural Resources to ensure protection. Although these laws and policies do not guarantee protection, they are an added incentive for protecting these species.

There would be no impairment of species of concern.

Wilderness Resources and Values

Although there is no designated wilderness, wilderness values in Beaver and Chapel Basins would be preserved by continuing current management policy as set forth in the national lakeshore's "Backcountry Management Plan." Overall, continued management as back-country would have a moderate beneficial effect on wilderness resources and values. The opportunity for solitude has been adversely affected to a moderate degree for the short term but recurring basis by noise from boats and logging. The effect of noise from the tour boat public address system is mitigable.

Cumulative Impacts. The U.S. Forest Service manages two wilderness areas in Hiawatha National Forest – Big Island 6,008 acres and Rock River Canyon 5,285 acres (11,293 acres total). No other wilderness areas are proposed for the area. There are no state wilderness areas nearby. The cumulative effect is that wilderness values have been protected on some federal land managed by the U.S. Forest Service. If current management of the Chapel and Beaver Basins (around 19,000 acres) continues at the national lakeshore, in combination with the existing wilderness areas nearby, there would be an overall long-term major beneficial cumulative impact on wilderness resources and values because these resources and values would be preserved. However, if current management of the Chapel and Beaver Basins did not continue at the national lakeshore, in combination with the existing wilderness areas nearby, there would be an overall long-term major adverse cumulative impact on wilderness resources and values because the wilderness values and resources in the national lakeshore would be degraded or lost.

Conclusions: Wilderness values would be maintained by managing the Beaver and

Chapel Basins as primitive and natural. This is a moderate long-term benefit for wilderness values. Wilderness values could be adversely affected in the long term without the designation of wilderness — a moderate impact. The opportunity for solitude has been adversely affected to a moderate degree for the short term but recurring basis by noise from boats, the tour boat public address system, and logging. The effect of noise from tour boat public address system is mitigable. The total area of wilderness in the central Upper Peninsula would not increase.

Although the opportunity for solitude would continue to be adversely affected to a moderate degree, these impacts (from tour boats and logging) would occur intermittently and for short periods of time. Noise from the tour boats is mitigable with a different sound system for the tour boats. There would be no major adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national lakeshore's establishing legislation, (2) key to the natural or cultural integrity or opportunities for enjoyment of the national lakeshore, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of wilderness resources or values.

IMPACTS ON SOCIOECONOMIC RESOURCES (LOCAL ECONOMY AND COUNTY TAX BASE)

There would be no changes in management or operations of the national lakeshore, therefore, no new impacts would be expected, and current beneficial effects on the area economy would continue. The visitation to Pictured Rocks National Lakeshore has remained relatively constant over the past decade — in the low- to mid-400,000 range. The annual operating budget has grown modestly to generally keep up with inflation. There would be some benefits from

expenditures of about \$21 million in life-cycle costs (estimated for a 25-year period), which would benefit the overall Alger County economy. There would be some short-term moderate benefits for some individuals and businesses involved with daily/annual operations. This would continue to be a long-term minor to moderate beneficial impact on the overall economy of Alger County.

There would be no major new construction projects or major improvements to facilities. The federal government would continue to pay PILT (Payment in lieu of taxes) payments to Alger County based upon a government-wide formula and the number of acres that were withdrawn from county tax rolls as the result of past federal acquisition.

Cumulative Impacts. There would be no perceptible change in the current continuing conditions expected, and no known actions in the past or in the reasonably foreseeable future by the National Park Service or by others that would result in minor cumulative impacts on the Alger County local economy and county tax base/ socioeconomic resources.

Conclusions. The long-term beneficial impacts of continuing existing management and operations would continue to be minor to moderate compared to the overall economy of Alger County. There would be some benefits from expenditures of about \$21 million in life-cycle costs (estimated for a 25-year period), which would benefit the overall Alger County economy. There would be some short-term moderate benefits for some individuals and businesses involved with national lakeshore daily/annual operations.

Alger County would continue to receive payment in lieu of taxes from the federal government for lands that have been previously acquired, a continuing long-term moderate beneficial impact.

IMPACTS ON VISITOR USE AND EXPERIENCE

Opportunities for Recreational Activities

There would be no new impacts of continuing existing opportunities for popular recreational activities (e.g., hiking, drive-in and backcountry camping, boating, hunting, fishing, kayaking, motorboat tours, skiing, snowmobiling, and ice climbing). There would be no new impacts from continuing use of motorboats on the Beaver Lakes and Grand Sable Lake (with restricted motor size), continuing commercial air tours, and continuing to allow backcountry camping at designated campgrounds.

The no-action alternative would maintain desirable opportunities for visitors to enjoy a more primitive, slower, unpaved driving experience, assuming that the Alger County keeps County Road H-58 as it is, and by letting some two-track roads (used mostly by hunters and local residents) remain open. Thus, maintaining the existing diversity of recreational driving experiences would be a continuing long-term minor beneficial impact on the recreational driving opportunities at the national lakeshore. However, this would be a long-term adverse minor impact on visitors who prefer to have the road paved because the rough road surface and dust common to unpaved roads would continue.

Cumulative Impacts. There would be no perceptible change in the current continuing conditions expected, and no known actions in the past or in the reasonably foreseeable future by the National Park Service or by others that would result in cumulative impacts on providing opportunities for recreational activities.

Conclusion. Maintaining the existing diversity of recreational driving experiences would have a long-term minor beneficial impact on the recreational driving opportunities at the national lakeshore for those who prefer a more primitive, slower, unpaved driving

experience. However, for those who prefer a less primitive paved experience, actions under this alternative would be a long-term minor adverse impact.

Access to Primary National Lakeshore Features

Under the no-action alternative the current mix of access (some features easy to get to, some moderate, and some more challenging) would be maintained. Several primary national lakeshore features, including Munising Falls, Miners Castle Beach, Grand Sable Dunes, and Sable Falls, would continue to be easily accessible via paved road and a short walk. Access to Miners Beach and falls would be via short hikes from unpaved access roads. Mosquito Beach, Chapel Beach, Twelvemile Beach, and Au Sable Light Station would be reached by unpaved road and a hike of more than a mile (unless approached by boat from Lake Superior).

In the no-action alternative, the continuation of motorized and nonmotorized boats approaching the cliffs and beaches on the Lake Superior shoreline would be a major long-term beneficial impact on people using the boats. The continuation of commercial motorboat tours (about 17.5 miles from Munising to Chapel Rock and back along the shoreline) would be a long-term moderate beneficial impact on visitors who want to see the Pictured Rocks from Lake Superior. The continuation of commercial kayak tours (typically about 3 miles from Miners Beach and back) would be a long-term beneficial minor impact for those visitors seeking a nonmotorized view of the Pictured Rocks from the water. Because the only other public access to similar lakeshore features in the immediate area is Grand Island National Recreation Area, which is accessible only via a ferry or privately owned watercraft, the impact of continuing the existing diversity of access offered in the national lakeshore would

be a long-term moderate beneficial impact on visitor access.

Cumulative Impacts. There would be no perceptible change in the current continuing conditions expected, and no known actions in the past or in the reasonably foreseeable future by the National Park Service or by others that would result in cumulative impacts on visitor access to primary national lakeshore features.

Conclusion. The impact of continuing the existing diversity of access offered in the national lakeshore would be a long-term moderate beneficial impact on visitor access to primary features. Motorized and nonmotorized boats would continue to approach cliffs and beaches on the Lake Superior shoreline, a long-term moderate benefit for visitors onboard the boats.

Noise

Public comments received on the preliminary draft alternatives indicate that many visitors are seeking a quiet, nature-based experience when visiting the national lakeshore and man-made noise that carries over long distances is incompatible with that expectation. The primary sources of man-made noise in the national lakeshore, most of which are generated from outside the national lakeshore, are snowmobiles, motorized boats, personal watercraft outside the 0.25-mile boundary, the public address system on Lake Superior tour boats, and logging vehicles and chainsaws from logging operations. Noise from these sources would continue to be readily apparent, which would result in recurring, short-term, moderate, adverse impacts on individual visitors and groups of visitors and the quiet, nature-based experiences they would likely be seeking.

Personal watercraft are permitted within the national lakeshore boundaries only from the western lakeshore boundary to the east end of

Miners Beach. Noise carries well over water, and it is anticipated that noise from personal watercraft within the permitted portion of the national lakeshore as well as outside the boundary would still be audible from the land.

Cars, trucks, and recreational vehicles generate some noise, which tends to be greater on gravel roads than on paved or sandy roads; however, in most areas the vegetation dampens and absorbs sounds sufficiently so that the adverse impact is short-term and negligible.

Sounds from vehicles on the road to Little Beaver Lake (especially sounds from towed trailers or campers) carry into Beaver Basin, causing a recurring, short-term, minor, adverse impact on visitors seeking a wilderness type experience in the Beaver Basin.

Cumulative Impacts. Noise outside of the national lakeshore is primarily from personal watercraft near the east and west ends of the national lakeshore, chainsaws and logging vehicles associated with logging activities adjacent to the inland buffer zone, and snowmobiles in the winter along County Road H-58. These activities produce generally short-term, minor to moderate adverse impacts (depending on proximity to the noise source and setting). There are also occasional noise sources within the national lakeshore — the tour boat public address system, snowmobiles and vehicles on roads in the national lakeshore, and logging vehicles and chainsaws used for logging in the inland buffer zone. These disruptions, in combination with the noise sources mentioned above that are outside the national lakeshore, would result in continuing adverse short-term minor to moderate (depending on proximity to the noise source and setting) cumulative impacts on the natural quiet of the national lakeshore.

Conclusion. Man-made noise from snowmobiles, motorized boats, personal watercraft outside the 0.25-mile boundary, the public address system on Lake Superior tour boats,

and logging vehicles and chainsaws from logging operations would continue to have a short-term moderate adverse impact on the visitor experience. (Because there are several sources of noise, which sometimes overlap, the intensity was determined to be moderate.) Sounds from vehicles on the road to Little Beaver Lake (especially sounds from towed trailers or campers) carrying into Beaver Basin would continue to cause a short-term minor adverse impact on visitors there because the noise disturbance is intermittent and of short duration.

Scenic Character of County Road H-58

Maintaining the current conditions on H-58 — some portions paved with a wide vegetation clearance along the side of the road and other portions narrow, unpaved, and curvy with a canopy effect into the future — would be a long-term minor beneficial impact for those visitors seeking a slow-speed scenic driving experience; it would also be a long-term minor adverse impact on those visitors looking for a faster, more direct route between Munising and Grand Marais.

Cumulative Impacts. There would be no perceptible change in the current continuing conditions expected, and no known actions in the past or the reasonably foreseeable future by the National Park Service or by others that would result in cumulative impacts on the scenic character of H-58.

Conclusion. Maintaining the current conditions on H-58 would be a long-term minor beneficial impact on those visitors seeking a slow-speed scenic driving experience and a long-term minor adverse impact on those visitors looking for a faster, more direct route between Munising and Grand Marais (an alternate paved route using Highways 77 and 28 already exists).

Opportunities for People with Disabilities

Most visitor-oriented buildings in the national lakeshore are accessible to people with disabilities; exceptions include Au Sable Light Station, the Maritime Museum at Grand Marais, and the Sand Point boathouse. Although the exterior of these buildings can be seen from a boat or auto and interpretive pamphlets about them are available, their inaccessibility is a minor long-term adverse impact on disabled visitors because alternative forms of experiencing the historic structures are available. However, the lack of physical accessibility deprives them of the ability to see the resources first hand.

Some administrative facilities are accessible to people with disabilities, such as the Munising maintenance facility, but others, including the Sand Point headquarters building, the Grand Marais maintenance facility, and the Munising Range Light Station, are not. This inaccessibility means that some jobs at the national lakeshore are not available to people with certain disabilities, and that other disabled persons are not able to conduct business at the lakeshore. The no-action alternative would maintain this moderate, long-term adverse impact on national lakeshore staff members and others who are disabled.

Cumulative Impacts. There would be no perceptible change in the current continuing conditions expected, and no known actions in the past or the reasonably foreseeable future by the National Park Service or by others that would result in cumulative impacts that would affect this population.

Conclusion. Although many outdoor attractions would continue to be available to persons with disabilities, and others that are interpreted through photographs and pamphlets, some important visitor-oriented and operations facilities (including lakeshore headquarters) would remain inaccessible. Thus, moderate long-term adverse effects on persons who are disabled would continue.

IMPACTS ON NATIONAL LAKESHORE OPERATIONS AND FACILITIES

Continuing the inefficient operations at the former Coast Guard Station at Sand Point and the Munising Range Light Station, the west end of the national lakeshore would be a moderate long-term adverse impact on national lakeshore operations because it is too small to adequately accommodate staff, the utilities are substandard, it lacks accessibility, and it is 5 miles from the Munising maintenance facility.

Continued use of the converted farm buildings and residence at the east end of the national lakeshore would continue to be a long-term moderate adverse impact on national lakeshore operations because the buildings have inadequate space and are substandard in terms of utilities and accessibility, and because staff time is required to drive between these buildings.

Emergency response times, because of slower sand-or dirt-based roads or gravel roads, would not change or improve under this alternative. This would continue to be a long-term moderate adverse impact in emergency situations when quick response times might be critical.

National lakeshore staff would continue to hike into Chapel Lake and Falls and use wheeled vehicles or boats (motorized vehicles) to conduct maintenance and resource management activities at the Beaver Lakes and along the Lake Superior shoreline. This motorized access is a long-term minor beneficial impact on operational efficiency because employees can quickly access an area and transport necessary maintenance equipment and supplies.

Transferring 7.5 acres at Grand Marais Coast Guard Station from the Coast Guard and the Army Corps of Engineers would consolidate and simplify management of this small parcel to one agency. This would be a long-term,

minor, beneficial impact on national lakeshore operations in Grand Marais.

Cumulative Impacts. There would be no perceptible change in the current continuing conditions expected, and no known actions in the past or reasonably foreseeable future by the National Park Service or by others that would result in cumulative impacts that would affect national lakeshore operations and facilities.

Conclusion. Operations would continue to be inefficient with the dispersed facilities and limited space — a moderate long-term adverse impact. Emergency response times to some areas would continue to be slow — a long-term moderate adverse impact. The continuation of the existing motorized access for national lakeshore operations is a long-term minor beneficial impact on operational efficiency by allowing employees to continue to quickly access an area and to transport necessary maintenance equipment and supplies.

UNAVOIDABLE ADVERSE IMPACTS

The following discussion identifies impacts on resources associated with the implementation of this alternative. These impacts have been identified as being unavoidable, moderate to major, and adverse.

Some important visitor-oriented and operations facilities would remain inaccessible for people with disabilities. This would be a

long-term, adverse, moderate impact on people with disabilities.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The irretrievable and irreversible commitments of resources that are associated with this alternative are summarized below. Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long-term (e.g., the regrowth of an old-growth forest). Irretrievable commitments are those that are lost for a period of time (e.g., if a road is constructed, the vegetative productivity is lost for as long as the road remains).

There would be no irreversible and irretrievable commitments of resources under the no-action alternative.

RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

This section discusses the effects of the short-term use of resources in this alternative on the long-term productivity of the resources.

There would be no adverse effects on biological, agricultural, or economic productivity associated with implementing the no-action alternative.

IMPACTS OF THE PREFERRED ALTERNATIVE

IMPACTS ON CULTURAL RESOURCES

Archeological Sites

The construction operations associated with paving some portions of County Road H-58 and constructing the Miners River campground and the new east-end administrative/ maintenance facility could result in damage to existing archeological sites (if any) in the vicinity of the road right-of-way/proposed construction.

Before any ground-disturbing activities occurred, surveys would be done to identify the presence of archeological resources in the project area. When possible, identified sites would be avoided and protected to the extent possible, depending on staffing and funding levels. If avoidance was not possible, impacts would be mitigated by recovering site data, which would be done in accord with an archeological data recovery assessment developed in consultation with the state historic preservation officer (see “Mitigation” section). The resultant impacts on sites that could not be avoided would be anticipated to be long term, minor (for sites with low data recovery potential) to moderate (for sites with greater data recovery potential), and adverse.

Cumulative Impacts. An archeological site could possibly be disturbed/exposed/impacted by human activity (such as residential development, recreational activities, logging, or artifact hunting) or natural processes (such as erosion or vegetation loss). The possibility of ground disturbance and exposure would be most likely at readily accessible locations such as Miners Beach, Hurricane River, Grand Sable Lake, Little Beaver Lake, and several backcountry locations. The site would be protected to the extent possible, depending on staffing and funding levels. The loss would be mitigated by data recovery (salvage archeology), which would be done in consultation with tribes and the state historic preservation officer (see “Mitigation” section). The resulting impact on

such sites would be anticipated to be adverse, long term, and minor (at a site with low data potential) to moderate (at a site with greater data potential). These impacts, combined with the impacts of paving and constructing roads and constructing a campground and east-end facility would have a long-term minor to moderate adverse cumulative impact on archeological sites under the preferred alternative.

Conclusion. Should sites be identified during surveys of project areas, these site(s) would be protected to the extent possible, depending on staffing and funding levels. When possible, the site would be avoided; if avoidance was not possible, impacts would be mitigated by recovering site data. The overall impacts on sites that could not be avoided would be long-term, minor to moderate (depending on the data recovery potential of the site) adverse impacts.

There would be no impairment of archeological sites.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would result in adverse effects on archeological sites that were disturbed by paving or construction activities and could not be avoided.

Historic Structures

Preserving and rehabilitating the Munising Range Light Station; rehabilitating the Sand Point Coast Guard Station and boat house, and actively interpreting the site and moving some of the adaptive uses to other sites; doing preservation treatment on the ancillary buildings at the Au Sable Light Station; rehabilitating structures at and developing a site plan for the Grand Marais Coast Guard Station;

rehabilitating the Grand Marais Harbor of Refuge quarters; and rehabilitating the Abrahamson barn would help protect the documented architectural values (in compliance with the *Secretary's Standards for Historic Structures*) of these structures. Historic buildings would be enhanced through rehabilitation of these resources as recommended in the historic structure reports/plans. Although some historic fabric might be lost during preservation/rehabilitation efforts, a minor long-term adverse impact (because changes would be minimal), overall there would be a long-term minor to moderate beneficial impact because the structures would be rehabilitated and documented architectural elements and values would be protected.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in the preferred alternative to have a cumulative impact on historic structures.

Conclusion. Actions under this alternative would have long-term minor to moderate beneficial impacts on the Munising Range Light Station, Au Sable Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, and the Abrahamson barn because the structures would be rehabilitated and preserved and documented architectural values would be preserved.

There would be no impairment of historic structures.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 "Assessment of Adverse Impacts") the National Park Service finds that the selection of this alternative would have an adverse impact from the loss of some historic fabric from the preservation/rehabilitation efforts (changes would be minimal). However, overall there would not be an adverse effect because the structures would be preserved from further deterioration and important

architectural elements and values would be protected.

Cultural Landscapes

Rehabilitating and preserving the cultural landscape at the Munising Range Light Station; rehabilitating and preserving the cultural landscape at the Sand Point Coast Guard Station and boat house, actively interpreting the site, and moving some of the adaptive uses to other sites; restoring and preserving the cultural landscape at the Au Sable Light Station; rehabilitating and preserving the cultural landscape and developing a site plan for the Grand Marais Coast Guard Station; rehabilitating and preserving the cultural landscape at the Grand Marais Harbor of Refuge quarters; and rehabilitating and preserving the cultural landscapes at the Abrahamson and Becker Farms would be a long-term moderate beneficial impact on these important cultural landscapes. Significant elements of the historic landscape (not buildings) scenes would be rehabilitated to a reasonable facsimile of their period of historical significance, documented values would be preserved, and noncontributing elements would be removed.

In areas of abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas, woody vegetation would encroach, resulting in a more closed-in appearance and eventual change to a more wooded scene. This would result in the loss of landscapes associated with farming or other agricultural activities. The potential loss of some of these remaining landscapes in the national lakeshore would have a minor long-term adverse impact on these cultural landscapes, and relatively few would be left.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in the preferred alternative to have a cumulative impact on cultural landscapes.

Conclusion. Restoring/rehabilitating/preserving the cultural landscapes at the Munising Range Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and the Abrahamson and Becker farms under this alternative would have long-term, moderate beneficial impacts on the cultural landscapes associated with these sites by preserving their documented values, removing noncontributing elements, and adding other elements reflective of a reasonable facsimile of the cultural landscape's period of significance.

Woody vegetation would encroach in areas of abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas, resulting in the eventual loss of landscapes associated with farming or other agricultural activities — a minor long-term adverse impact on these cultural landscapes — and relatively few would be left.

There would be no impairment of cultural landscapes.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would not have adverse effects on the cultural landscapes at Munising Range Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and the Abrahamson farm.

Woody vegetation would encroach in areas of abandoned agricultural operations, cabin clearings, and abandoned roads, resulting in the eventual loss of landscapes associated with farming or other agricultural activities — an adverse impact on these cultural landscapes, and relatively few would be left.

Ethnographic Resources

Under the preferred action, there would be no project or construction-related ground disturbance with the potential to impact known ethnographic resources.

Native Americans desiring privacy for religious activities would be disrupted occasionally by such things as the presence of other visitors who are hiking or camping and noise from visitor-related activities such as motorboats, and tour boats. These conflicts would constitute a minor, short-term, reoccurring, adverse impact, however, conflicts would only be occasional. (Areas where impacts could occur include high cliffs or promontories, river and creek mouths, inland lakes, Lake Superior, and the Grand Sable Dunes.)

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in the preferred alternative to have a cumulative impact on ethnographic resources.

Conclusion. Under the preferred alternative, there would be no project- or construction-related ground disturbance with the potential to impact known ethnographic resources.

Native Americans desiring privacy for religious activities would be disrupted occasionally by such things as the presence of other visitors who are hiking or camping and noise from visitor-related activities such as motorboats, and tour boats. These conflicts would constitute a minor, short-term, reoccurring, adverse impact; however, conflicts would only be occasional.

There would be no impairment of ethnographic resources.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would have recurring, occasional, adverse impacts on the

ability of Native Americans to collect resources for ceremonial and religious purposes or to conduct ceremonies.

Museum Collection

Moving the museum collection to the proposed new administrative headquarters building near Munising would provide long-term major beneficial effects for the preservation the collection because the new repository would meet modern professional standards and would be more accessible to staff and researchers.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions described above (moving the collection to a repository that meets professional standards) to have a cumulative impact on the museum collection under the preferred alternative.

Conclusion. Actions under this alternative would have long-term major beneficial impacts on the preservation of and access to the national lakeshore's museum collection by staff and researchers because the collection would be housed in a new repository that would meet modern professional standards and would be more accessible to staff and researchers.

There would be no impairment of the museum collection.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 "Assessment of Adverse Impacts") the National Park Service finds that the selection of this alternative would not have an adverse effect on the museum collection.

IMPACTS ON NATURAL RESOURCES

Species of Concern

Under preferred alternative the National Park Service would have the same effect on piping plover and its habitat as the no-action

alternative. The Park Service would continue to protect designated critical habitat for piping plover. No development would occur on the lakeshore-owned beach at Grand Marais, and no NPS action is foreseen to increase visitor use of the beach. National lakeshore regulations requiring pets to be leashed and prohibiting all-terrain-vehicle use would remain in effect. Piping plover critical habitat would benefit from cooperative efforts between the NPS staff and other cooperators, such as monitoring and protecting the beach, while implementing the piping plover recovery plan (USFWS 2003b).

The elimination of gasoline-powered boats on Beaver and Little Beaver Lakes could reduce further the already low potential for disturbance of bald eagle nesting in these areas, but the benefit would be difficult to quantify. There would be no change at other nest sites in the lakeshore, and no adverse effect would be expected.

Because there would be no change in the management of Grand Sable Dunes, Pitcher's thistle and other species of concern found there would continue to benefit from the protection afforded by the designation and management of the area as a research natural area. All species of concern found in the dunes would remain protected and primarily subject to natural changes. It is unlikely that species of concern elsewhere in the lakeshore would be affected because management prescriptions and actions in this alternative would not lead to activities that would be detrimental to individual species of concern.

The development of the Miners campground would probably not adversely affect gray wolf use of the lakeshore. There has been evidence of wolf activity in the Miners area. The campground would be in an area with little development. Because the overall level of development in the lakeshore would remain very low, it is unlikely that this additional development would affect use of the national lakeshore by wolves (USFWS 1992; MDNR 1997). There would be no appreciable increase in the density of roads, although road

improvements, particularly paving of primary roads, could result in higher travel speeds. High speeds (about 60 miles per hour) could increase the potential for road fatalities if wolf use coincides with traffic use. The design for H-58 would incorporate elements to provide a design speed of about 35 miles per hour.

The abandonment of old logging roads in the Beaver Basin and other areas managed under the primitive prescription would have a negligible long-term effect on species of concern, adverse or beneficial, because these roads have not been available for vehicle use for many years.

Cumulative Impacts. In Michigan, endangered species protection applies to all private and public land. The Endangered Species Protection law states that an individual may not harm or take threatened and endangered species (Michigan Natural Resources and Environmental Protection Act 1994, part 365). It is the responsibility of the landowner to submit projects, including logging, for review to determine if a threatened or endangered species is known to occur or has potential to occur within the project scope. ForestLand Group, Limited Liability Corporation, management practices address species of concern as identified by the Michigan Department of Natural Resources and the U.S. Fish and Wildlife Service. Species of concern would continue to be afforded protection in the inland buffer zone as well as in the shoreline zone. The net long-term cumulative effect would be negligible.

Also, the U.S. Fish and Wildlife Service and the Michigan Department of Natural Resources conduct active management programs for the gray wolf in the Seney area, a major short- and long-term benefit for this species in the central Upper Peninsula.

Although the policies and laws mentioned above do not guarantee protection, they do serve as more of a deterrent to harming endangered species than without these laws. In combination with federal laws that protect endangered species, overall cumulative effect is

that species of concern would continue to be protected in the national lakeshore, a major short- and long-term benefit.

Conclusion. There would be negligible long-term effects on the bald eagle, Pitcher's thistle, gray wolf, piping plover, designated piping plover critical habitat, or other species of concern associated with implementing the preferred alternative. (For additional details on potential impacts on threatened and endangered species and their habitat, see the biological assessment in appendix D.) Species occurring within NPS-owned lands are managed to maintain or enhance beneficial conditions. Species inhabiting state lands are afforded protection through review and management. Species on privately owned land are subject to state law and require review by the Michigan Department of Natural Resources to ensure protection. Although these laws and policies do not guarantee protection, they are an added incentive for protecting these species.

There would be no impairment of species of concern.

Wilderness Resources and Values

If Congress designated wilderness on 11,739 acres in the Beaver Basin, it would preserve the wilderness values of this area in perpetuity — a long-term moderate beneficial impact.

Most of Chapel Basin would be managed under the primitive prescription to preserve primitive values, a major long-term beneficial impact. The area around Chapel Lake would be managed to allow improved trail development — a minor long-term impact that would be reversible. The total area of wilderness in the central Upper Peninsula would increase by about 24%.

Opportunities for solitude and natural quiet would improve with the reduction of noise from the public address system used on tour boats between Miners Castle and Chapel Rock — a moderate, long-term, intermittent beneficial impact.

Cumulative Impacts. The addition of Beaver Basin as wilderness (11,739 acres) would increase the protection afforded by wilderness designation in the central Upper Peninsula to 48,182 acres (Big Island 6,008 acres, Strangmoor Bog 25,150 acres, and Rock River Canyon 5,285 acres), resulting in a moderate beneficial cumulative impact.

Conclusion. Wilderness values in the Beaver Basin would be preserved by wilderness designation (11,739 acres), a moderate long-term beneficial impact. Reducing the noise from tour boat public address system operations between Miners Castle and Chapel Rock would be a moderate long-term intermittent, beneficial impact on opportunities for solitude and natural quiet. Most of the Chapel Basin would be managed to preserve wilderness values, a major long-term beneficial impact. The area around Chapel Lake would be managed to allow improved trail development, a minor long-term adverse impact that is reversible. The total area of wilderness in the central Upper Peninsula would increase by about 24% — a long-term moderate beneficial impact for those who desire that kind of experience.

There would be no impairment of wilderness resources or values from actions proposed in this alternative.

IMPACTS ON SOCIOECONOMIC RESOURCES (LOCAL ECONOMY AND COUNTY TAX BASE)

The preferred alternative proposes a range of development and restoration projects (construction of the Miners campground and trails and the east-end administration/maintenance facility; paving portions of H-58; and partial landscape restoration at the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, Au Sable Light Station, the Munising Range Light Station, and the Abrahamson Farm) to be accomplished over the life of this plan. There would be some benefits from expenditures of about \$50 million in life-cycle costs (estimated

for a 25-year period), which would benefit the overall Alger County economy. There would be some moderate to major short-term benefits for some individuals (mostly in the construction industry) from increased business and employment opportunities related to lakeshore projects. This economic activity would occur over time as various projects are phased in and others are completed. How much the Alger County economy actually benefits would depend upon the degree to which national lakeshore needs are fulfilled within and by the local businesses.

The national lakeshore would remain a part of the local socioeconomic environment. NPS expenditures for goods, services, and staff would continue to benefit the local economy. Visitors would still be attracted to the county because of the national lakeshore, and their spending patterns would continue to contribute to the area's economy. The actions proposed in the preferred alternative are expected to result in short-term beneficial impacts on income, earnings, and employment and unemployment.

Cumulative Impacts. Development projects within the national lakeshore in this alternative combined with ongoing or reasonably foreseeable activities in the construction sector outside the national lakeshore (some new housing construction and proposed commercial development on the outskirts of Munising) would contribute short-term expenditures over the life of the plan that would have a minor beneficial cumulative impact primarily affecting the construction industry.

Conclusion. Overall, the long-term benefits would be moderate compared to the economy of Alger County. There would be some benefits from expenditures of about \$50 million in life-cycle costs (estimated for a 25-year period), which would benefit the overall Alger County economy. There would be some moderate to major short-term benefits for some individuals (mostly in the construction industry) from increased business and employment opportunities related to lakeshore projects proposed in this alternative.

National lakeshore operations would be a continuing long-term, beneficial contribution to the local economy.

IMPACTS ON VISITOR USE AND EXPERIENCE

Opportunities for Recreational Activities

In the preferred alternative, there would be some changes in recreational opportunities compared to the no-action alternative. Although electric motors would be allowed, gasoline-powered motorboats would no longer be allowed on Little Beaver and Beaver Lakes because the lakes would be managed under the primitive prescription — a long-term, moderate adverse impact on visitors who desire this kind of experience at the Beaver Lakes, and a long-term minor beneficial impact on visitors who find motorboat noise undesirable.

A new drive-in campground and trails at the Miners area would expand camping and hiking opportunities in the national lakeshore. However, hikers in the Miners area might encounter more hikers than in the no-action alternative, a minor long-term adverse impact. Restoration/ preservation measures and other improvements at the Munising Range Light Station, Sand Point and Grand Marais Coast Guard Stations, Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and Abrahamson Farm would improve opportunities for touring and learning about historic resources. Improvements at the Grand Marais Coast Guard Point would provide additional opportunities for day use activities. Together these additional or improved recreational opportunities would have a moderate beneficial impact on the visitor experience.

As the county converts sections of County Road H-58 to pavement, changes would occur in the road's character, even though efforts would be made to maintain characteristics that visitors say contribute to the road's scenic character — narrow and slow speed with forest canopy. Some stretches of H-58 would be wider, more

and different types of vehicles would be encountered, vehicle speeds would increase, the forest canopy over the road would be eliminated in places, and opportunities for a primitive driving experience leading to primary national lakeshore features would likely be reduced. This reduction would be a moderate adverse impact on visitors over the long term.

Closing two-track roads in Beaver Basin and other areas managed as primitive would have a minor long-term adverse impact on visitor experiences because there are few two-track roads and they are not maintained.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on opportunities for recreational experiences under this alternative.

Conclusion. Impacts on opportunities for recreational activities would be long term and mixed. Eliminating gasoline-powered motorboating opportunities on the Beaver Lakes would have a long-term minor adverse impact on visitors who desire this kind of experience in this area and a long-term moderate beneficial impact on visitors who find gasoline-powered motorboat noise undesirable. The continued use of electric motors on Little Beaver and Beaver Lakes would allow visitors to easily and quietly maneuver their boats around the lakes — a long term minor beneficial impact on both visitors that use the lake with electric motors and visitors who find gasoline-powered motorboats undesirable. Additional or improved recreational opportunities (hiking, camping, and touring historic resources) would provide a long-term moderate beneficial impact. Opportunities for primitive driving experiences would be eliminated, a long-term moderate adverse impact.

Access to Primary National Lakeshore Features

Somewhat easier access would be provided to many primary national lakeshore features (e.g., Little Beaver Lake, Beaver Basin overlook and Log Slide) if the county makes recommended improvements to County Road H- 58. Improvements to existing access roads (e.g., Miners Falls and Log Slide Roads) would also contribute to this effect. As a result, visitors would be able to visit more lakeshore features in a given length of time, a moderate long- term beneficial impact. On the other hand, as a result of improved access, certain areas might get more visitors and could be crowded at times, a minor long- term adverse impact.

Motorized and nonmotorized boats would continue to approach cliffs and beaches on the Lake Superior shoreline, a long- term moderate benefit for visitors onboard the boats.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on access to primary national lakeshore features under this alternative.

Conclusion. Impacts on access to primary national lakeshore features would be long- term and mixed. Visitors would be able to visit more lakeshore features in a given length of time, a moderate beneficial impact. Due to improved access, certain areas might be crowded at times, a minor adverse impact. Motorized and nonmotorized boats would continue to approach cliffs and beaches on the Lake Superior shoreline, a long- term moderate benefit for visitors onboard the boats.

Noise

Noise from snowmobiles, motorboats, and chainsaws would have a long- term, moderate adverse impact on the visitor experience in much of the national lakeshore unless ways to reduce or muffle the sounds were implemented.

Because of modifications to the tour boat public address system, noise would be reduced from the west boundary to Chapel Beach — a moderate, long- term, beneficial, intermittent impact. Gasoline- powered motorboat noise would be eliminated on the Beaver Lakes (managed as the primitive prescription). Compared to the no- action alternative these changes would have a long- term minor beneficial impact on visitors who find such noise undesirable because the current 10- horsepower restriction in the no- action alternative produces only low noise levels.

Reducing the noise from the public address system on the tour boats would have a moderate, long- term, intermittent beneficial impact on the visitor experience for visitors who find such noise undesirable.

Sounds from vehicles on the road to Little Beaver Lake (especially sounds from towed trailers or campers) carry into Beaver Basin, causing a recurring, short- term, minor, adverse impact on visitors seeking a wilderness type experience in the Beaver Basin.

Cumulative Impacts. Noise outside of the national lakeshore is primarily from personal watercraft and commercial boat tours outside the 0.25- mile boundary, near the east and west ends of the national lakeshore. Noise also comes from logging vehicles and chainsaws associated with logging activities adjacent to the inland buffer zone, and snowmobiles in the winter along County Road H- 58. These activities produce generally short- term, minor to moderate adverse impacts (depending on proximity to the noise source and setting). There would also be occasional noise sources within the national lakeshore — snowmobiles and vehicles on roads in the national lakeshore, and chainsaws used for logging in the inland buffer zone. These disruptions, in combination with the noise sources mentioned above that are outside the national lakeshore, would result in continuing adverse short- term minor to moderate (depending on proximity to the noise source and setting) cumulative impacts on the natural quiet of the national lakeshore. Noise

from the tour boat public address system would be reduced under this alternative — a long-term moderate beneficial impact.

Conclusion. Man-made noise from snowmobiles, motorized boats, and logging vehicles and chainsaws from logging operations would continue to have a long-term, moderate adverse impact on the visitor experience. Gasoline-powered motorboat noise would be eliminated on the Beaver Lakes (managed as the primitive prescription). Compared to the no-action alternative these changes would have a long-term minor beneficial impact on visitors who find such noise undesirable because the current 10-horsepower restriction in the no-action alternative produces only low noise levels. Noise from the tour boat public address system would be reduced under this alternative — a long-term moderate intermittent impact.

Sounds from vehicles on the road to Little Beaver Lake would cause a recurring, short-term, minor, adverse impact on visitors seeking a wilderness-type experience in the Beaver Basin.

Scenic Character of County Road H- 58

Some loss of the characteristics that many visitors say contribute to H- 58's scenic character (narrow width, curves, and forest canopy) would occur if the county makes the recommended improvements (paving and improved gravel) to this road. This would result in a moderate long-term adverse impact on the visitor experience.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on the scenic character of County Road H- 58 under this alternative.

Conclusion. If recommended changes to County Road H- 58 were made, these changes would have a moderate, long-term adverse impact on the road's scenic character.

Opportunities for People with Disabilities

A new campground at Miners would be accessible to people with disabilities, providing additional options for campers who are not able to use backcountry campgrounds. The Grand Marais Coast Guard Point would provide a new day use area that is accessible to visitors with disabilities. Compared to the no-action alternative, these measures would have a minor long-term beneficial impact on disabled visitors because there would not be much change from existing accessible opportunities.

Most visitor-oriented buildings in the national lakeshore are accessible to people with disabilities; exceptions include Au Sable Light Station, the Maritime Museum at Grand Marais, and the Sand Point boathouse. Although the exterior of these buildings can be seen from a boat or auto and interpretive pamphlets about them are available, their inaccessibility is a minor long-term adverse impact on visitors with disabilities because alternative forms of experiencing the historic structures are available. However, the lack of physical accessibility deprives them of the ability to see the resources first hand.

Moving the headquarters function from Sand Point to a new administration building (accessible to visitors with disabilities) near the Munising maintenance facility and consolidating administrative and maintenance functions in a new facility near Grand Marais (also accessible to visitors with disabilities) would have a major beneficial impact on disabled lakeshore staff and other disabled persons needing to conduct business in the national lakeshore because the current headquarters is not accessible to people with disabilities.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on people with disabilities.

Conclusion. Providing a new campground at Miners, and a new day use area at the Grand

Marais Coast Guard Point (both accessible to visitors with disabilities) might make it easier for disabled visitors to get to, see, or use additional national lakeshore features. These actions would have minor long- term beneficial impacts on visitors with disabilities.

Moving the headquarters function to a new administration building (accessible to visitors with disabilities) near Munising and consolidating administrative and maintenance in a new facility near Grand Marais (also accessible to visitors with disabilities) would have a major long- term beneficial impact on staff and others with disabilities who might need to conduct business in the national lakeshore.

IMPACTS ON NATIONAL LAKESHORE OPERATIONS

Consolidating national lakeshore operations at both ends of the national lakeshore in new facilities that meet NPS standards would improve operational efficiency, providing a long- term moderate benefit. Moving the headquarters office from Sand Point to a new administration building near the Munising maintenance facility would not impact soils because the underground area has already been readied for the construction of the new building.

Leasing the Munising Range Light Station for needed staff space would be an asset to the staff and a minor short- term beneficial impact on lakeshore operations.

Improvements to H- 58, if made by the county, would result in a minor long- term decrease in emergency response times in the central and eastern portions of the lakeshore. However, impacts would be minor because the road would remain a slow- speed road by design.

Developing a new drive- in campground would have a minor long- term adverse impact on enforcement staff who would have another site to patrol and maintenance staff would have an

additional campground to operate and maintain.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on national lakeshore operations.

Conclusion. Implementing the preferred alternative would have a moderate long- term benefit on national lakeshore operations from consolidating operations in new facilities at both ends of the national lakeshore.

Improvements to H- 58, if made by the county, would result in a minor long- term decrease in emergency response times in the central and eastern portions of the lakeshore.

UNAVOIDABLE ADVERSE IMPACTS

The following discussion identifies impacts on resources associated with the implementation of this alternative. These impacts have been identified as being unavoidable, moderate to major, and adverse.

Some archeological sites adjacent to construction would be subject to disturbance.

Restricting gasoline motors on Little Beaver and Beaver Lakes and closing primitive roads would reduce opportunities for these types of experiences in the Beaver Basin.

Improvements to County Road H- 58 in the national lakeshore would change its scenic quality from a primitive road to a rural highway experience between Grand Sable Lake and Log Slide. Improving the remainder of County Road H- 58 outside of national lakeshore boundaries (by the county) would make the scenic character more open.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The irretrievable and irreversible commitments of resources that are associated with this alternative are summarized below. Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long- term (e.g., the regrowth of an old- growth forest). Irretrievable commitments are those that are lost for a period of time (e.g., if a road is constructed, the vegetative productivity is lost for as long as the highway remains).

No irreversible or irretrievable commitments of resources were identified for the preferred alternative.

RELATIONSHIP OF SHORT- TERM USES AND LONG- TERM PRODUCTIVITY

This section discusses the effects of the short-term use of resources in this alternative on the long- term productivity of the resources.

There would be no adverse effects on biological or agricultural productivity associated with implementing the preferred alternative.

IMPACTS OF ALTERNATIVE A

IMPACTS ON CULTURAL RESOURCES

Archeological Sites

The construction operations associated with paving County Road H- 58 and constructing the Miners campground and the new east-end administrative maintenance facility could result in damage to potential archeological sites in the vicinity of the road right-of-way/proposed construction. Before any ground-disturbing activities occurred, surveys would be done to identify the presence of archeological resources in the project area. When possible, identified sites would be avoided and protected to the extent possible, depending on staffing and funding levels. If avoidance was not possible, impacts would be mitigated by recovering site data, which would be done in accord with an archeological data recovery assessment developed in consultation with the state historic preservation officer (see “Mitigation” section). The resultant impacts on sites that could not be avoided would be anticipated to be long term, minor (for sites with low data recovery potential) to moderate (for sites with greater data recovery potential), and adverse.

Cumulative Impacts. An archeological site could possibly be disturbed/exposed/impacted by human activity (such as residential development, recreational activities, logging, or artifact hunting) or natural processes (such as erosion or vegetation loss). The possibility of ground disturbance and exposure would be most likely at readily accessible locations such as Miners Beach, Hurricane River, Grand Sable Lake, Little Beaver Lake, and several backcountry locations. The site would be protected to the extent possible, depending on staffing and funding levels. The loss would be mitigated by data recovery (salvage archeology), which would be done in consultation with the state historic preservation officer (see “Mitigation”

section). The resulting impact on such sites would be anticipated to be adverse, long term, and minor (at a site with low data potential) to moderate (at a site with greater data potential). These impacts, combined with the impacts of paving and constructing roads, constructing the east-end administration/maintenance facility, and constructing a campground would have a long-term minor to moderate adverse cumulative impact on archeological sites under alternative A.

Conclusion. Should sites be identified during surveys of project areas, these site(s) would be protected to the extent possible, depending on staffing and funding levels. When possible, the site would be avoided; if avoidance was not possible, impacts would be mitigated by recovering site data. The overall impacts on sites that could not be avoided would be long-term, minor to moderate (depending on the data recovery potential of the site) adverse impacts.

There would be no impairment of archeological sites.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would result in adverse effects on archeological sites that were disturbed by construction activities and could not be avoided.

Historic Structures

Preserving and rehabilitating the Munising Range Light Station; rehabilitating the Sand Point Coast Guard Station and boat house, and actively interpreting the site and moving some of the adaptive uses to other sites; doing preservation treatment on the ancillary buildings at the Au Sable Light Station;

rehabilitating structures at and developing a site plan for the Grand Marais Coast Guard Station; rehabilitating the Grand Marais Harbor of Refuge quarters; and rehabilitating the Abrahamson barn would help protect the documented architectural values (in compliance with the *Secretary's Standards for Historic Structures*) of these structures. Historic buildings would be enhanced through rehabilitation of these resources as recommended in the historic structure reports/ plans. Although some historic fabric might be lost during preservation/ rehabilitation efforts, a minor long- term adverse impact (because changes would be minimal), overall there would be a long- term minor to moderate beneficial impact because the structures would be rehabilitated and documented architectural elements and values would be protected.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in alternative A to have a cumulative impact on historic structures.

Conclusion. Actions under this alternative would have long- term minor to moderate beneficial impacts on the Munising Range Light Station, Au Sable Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, and the Abrahamson barn because the structures would be rehabilitated and preserved and documented architectural values would be preserved.

There would be no impairment of historic structures.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 "Assessment of Adverse Impacts") the National Park Service finds that the selection of this alternative would have an adverse impact from the loss of some historic fabric from the preservation/rehabilitation efforts (changes would be minimal). However,

overall there would not be an adverse effect because the structures would be preserved from further deterioration and important architectural elements and values would be protected.

Cultural Landscapes

Rehabilitating the cultural landscape at the Munising Range Light Station; restoring and preserving the cultural landscape at the Sand Point Coast Guard Station and boat house, actively interpreting the site, and moving some of the adaptive uses to other sites; restoring and preserving the cultural landscape at the Au Sable Light Station; rehabilitating and preserving the cultural landscape and developing a site plan for the Grand Marais Coast Guard Station; rehabilitating and preserving the cultural landscape at the Grand Marais Harbor of Refuge quarters; and rehabilitating and preserving the cultural landscape at the Abrahamson and Becker Farms would be a long- term moderate beneficial impact on these important cultural landscapes. Significant elements of the historic landscape (not buildings) scenes would be restored to a reasonable facsimile of their period of historical significance, documented values would be preserved, and noncontributing elements would be removed.

In areas of abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas, woody vegetation would encroach, resulting in a more closed- in appearance and eventual change to a more wooded scene. This would result in the loss of landscapes associated with farming or other agricultural activities. The potential loss of some of these remaining landscapes in the national lakeshore would have a minor long- term adverse impact on these cultural landscapes and relatively few would be left.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by

others would be expected to combine with the actions proposed in alternative A to have a cumulative impact on cultural landscapes.

Conclusion. Restoring/rehabilitating/preserving the cultural landscapes at the Munising Range Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and the Abrahamson and Becker Farms under this alternative would have long- term, moderate beneficial impacts on the cultural landscapes associated with these sites by preserving their documented values, removing noncontributing elements, and adding other elements reflective of a reasonable facsimile of the cultural landscape's period of significance.

Woody vegetation would encroach in areas of abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas, resulting in the eventual loss of landscapes associated with farming or other agricultural activities — a minor long- term adverse impact on these cultural landscapes, and relatively few would be left.

There would be no impairment of cultural landscapes.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 "Assessment of Adverse Impacts") the National Park Service finds that the selection of this alternative would not have adverse effects on the cultural landscapes at Munising Range Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and the Abrahamson Farm.

Woody vegetation would encroach in areas of abandoned agricultural operations, cabin clearings, and abandoned roads, resulting in the eventual loss of landscapes associated with farming or other agricultural activities — an

adverse impact on these cultural landscapes, and relatively few would be left.

Ethnographic Resources

Under alternative A, there would be no project or construction- related ground disturbance with the potential to impact known ethnographic resources.

Native Americans desiring privacy for religious activities would be disrupted occasionally by such things as the presence of other visitors who are hiking or camping and noise from visitor- related activities such as motorboats, and tour boats. These conflicts would constitute a minor, short- term, reoccurring, adverse impact; however, conflicts would only be occasional. (Areas where impacts could occur include high cliffs or promontories, river and creek mouths, inland lakes, Lake Superior, and the Grand Sable Dunes.)

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in alternative A to have a cumulative impact on ethnographic resources.

Conclusion. Under alternative A, there would be no project- or construction- related ground disturbance with the potential to impact known ethnographic resources.

Native Americans desiring privacy for religious activities would be disrupted occasionally by such things as the presence of other visitors who are hiking or camping and noise from visitor- related activities such as motorboats, and tour boats. These conflicts would constitute a minor, short- term, reoccurring, adverse impact; however, conflicts would only be occasional.

There would be no impairment of ethnographic resources.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would have recurring, occasional, adverse impacts on the ability of Native Americans to collect resources for ceremonial and religious purposes or to conduct ceremonies.

Museum Collection

Moving the museum collection to the proposed new administrative headquarters building near Munising would provide long-term major beneficial effects for the preservation the collection because the new repository would meet modern professional standards and would be more accessible to staff and researchers.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions described above (moving the collection to a repository that meets professional standards) to have a cumulative impact on the museum collection under the alternative A.

Conclusion. Actions under this alternative would have long- term major beneficial impacts on the preservation of and access to the national lakeshore’s museum collection by staff and researchers because the collection would be housed in a new repository that would meet modern professional standards and would be more accessible to staff and researchers.

There would be no impairment of the museum collection.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would not

have an adverse effect on the museum collection.

IMPACTS ON NATURAL RESOURCES

Species of Concern

Alternative A would have the same effect on piping plover and its habitat as the no- action alternative. The Park Service would continue to protect designated critical habitat for piping plover. No development would occur on the lakeshore- owned beach at Grand Marais, and no NPS action is foreseen to increase visitor use of the beach. National lakeshore regulations requiring pets to be leashed and prohibiting all- terrain- vehicle use would remain in effect. Piping plover critical habitat would benefit from cooperative efforts between the NPS staff and other cooperators, such as monitoring and protecting the beach, while implementing the piping plover recovery plan (USFWS 2003b).

The continuation of current use patterns, including motorized boats on the Beaver and Grand Sable Lakes, would likely have no discernible adverse effect on nesting bald eagles in those areas. This determination is based on the following observations: that the nests were established while boating has been occurring; the use of the lakes during the critical period is low; and the boat use (fishing) occurs outside the tertiary buffer during critical periods (nesting, incubation, and brooding) (USFWS 1983). The nests are 0.25 mile or more away from these lakes, which is an acceptable distance to minimize the effect of human activity during nesting and fledging activity. Hiking occurs on a trail near one of the nests, but use during the critical periods is low, and the trail is outside the secondary buffer identified by the U.S. Fish and Wildlife Service (USFWS 1983).

Because there would be no change in the management of Grand Sable Dunes, Pitcher’s thistle and other species of concern found in

the dunes would continue to benefit from the protection afforded by the designation of the area as a research natural area. All species of concern found in the dunes would remain protected.

There would be no appreciable increase in the density of roads, although road improvements, particularly the paving of primary lakeshore roads, could result in higher travel speeds. High speeds (about 60 miles per hour) could increase the potential for road fatalities if wolf use coincides with traffic use. The design for H- 58 would incorporate elements to provide a design speed of about 35 miles per hour. As a result, implementing alternative A would have a negligible effect on gray wolves. Wolf use would be expected to follow present patterns, influenced by climate and food availability. Conditions within the national lakeshore would not be expected to change drastically, providing a moderate benefit for the gray wolf. Wolf use of the national lakeshore is not critical to the population and is not likely to become so.

Developing the Miners campground would increase human presence in that area. It is unlikely that campground development would have any effect on wolves because the levels of development in the lakeshore are well below those that could affect wolf use, and wolf use in the lakeshore is sporadic.

Abandoning primitive roads in the Beaver Basin and other areas managed under the primitive prescription would have a negligible effect on species of concern because the roads do not traverse specific habitat associated with species of concern.

Cumulative Impacts. Consultation with Michigan Department of Natural Resources, the U.S. Forest Service, the U.S. Fish and Wildlife Service, and ForestLand Group, Limited Liability Corporation, indicate that all agencies and entities implement policies that offer consideration and protection to species of concern in accord with federal and state

law regarding threatened, endangered, or other species of concern. Such policy provides a potentially major long- term benefit for species of concern in the inland buffer zone and Alger and Schoolcraft Counties, (and the state).

In Michigan, threatened and endangered species are protected on both public and private land. The Endangered Species Protection law states that an individual may not harm or take threatened and endangered species (Michigan Natural Resources and Environmental Protection Act 1994, part 365). It is the responsibility of the landowner to submit projects for review to determine if a threatened or endangered species is known to occur or has potential to occur within the project scope. Logging on state land is conducted under these guidelines. ForestLand Group, Limited Liability Corporation, management practices address species of concern as identified by the Michigan Department of Natural Resources and the U.S. Fish and Wildlife Service. Such law provides a potentially major long- term benefit for species of concern in the inland buffer zone, and Alger and Schoolcraft Counties, (and the state).

Also, the U.S. Fish and Wildlife Service and the Michigan Department of Natural Resources conduct active management programs for the gray wolf in the Seney area, a major short- and long- term benefit for this species in the central Upper Peninsula.

Although the policies and laws mentioned above do not guarantee protection, they do serve as more of a deterrent to harming endangered species than without these laws. In combination with federal laws that protect endangered species, overall cumulative effect is that species of concern would continue to be protected in the national lakeshore, a major short- and long - term benefit.

Conclusion. As in the no- action alternative, continuing current management practices

would perpetuate short- and long-term beneficial impacts for species of concern. Preserving Grand Sable Dunes as a research natural area would continue to provide a major long-term benefit for species of concern in that area by providing an environment with very limited use or disturbance. There would be no discernable adverse impacts on the bald eagle, Pitcher's thistle, the gray wolf, piping plover, designated piping plover critical habitat, or other species of concern expected if alternative A was implemented. Species occurring north of the inland buffer zone elsewhere in the lakeshore would continue to benefit from federal (NPS) protection. Species on state lands are afforded protection through review and management. Species on corporate and privately owned land are subject to state law and require review by the Michigan Department of Natural Resources to ensure protection. Although these laws and policies do not guarantee protection, they are an added incentive for protecting these species.

There would be no impairment of the park's species of concern.

Wilderness Resources and Values

Although there would be no designated wilderness, wilderness values in Beaver and Chapel Basins would be preserved by the primitive management prescription — a major long-term benefit. Wilderness values in the Chapel and Beaver Basins would not be guaranteed without designated wilderness. Unlike congressionally designated wilderness, which guarantees the wilderness values will be protected in perpetuity, management prescriptions can be changed via a general management plan amendment. Because management of the wilderness values cannot be guaranteed in perpetuity, this represents a moderate long-term adverse impact on wilderness values.

Opportunities for solitude and natural quiet would improve with the reduction of noise

from the public address system used on tour boats — a moderate, long-term, intermittent beneficial impact.

Cumulative Impacts. Natural quiet would continue to be diminished to a moderate degree by logging in the inland buffer zone. The effects are cyclic and depend on the proximity of logging activity to Beaver and Chapel Basins. The effect is moderate and would continue for the long term.

Conclusion. Overall, wilderness values would continue to benefit from managing much of the land within the Chapel and Beaver Basins under the primitive management prescription — a major long-term benefit. Reducing the sound on the public address system on the tour boats would improve wilderness values along the shoreline from the west boundary to Chapel Beach over the long term, but intermittently, to a moderate degree. Wilderness values in the Chapel and Beaver Basins would not be guaranteed without designated wilderness — a moderate, long-term, adverse impact.

Although the opportunity for solitude would continue to be adversely affected by logging in the inland buffer zone, to a moderate degree, these impacts would occur intermittently and for short periods of time. Noise from the tour boats would be reduced with a different sound system for the tour boat public address system. There would be no major adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national lakeshore's establishing legislation, (2) key to the natural or cultural integrity or opportunities for enjoyment of the national lakeshore, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of wilderness resources or values.

IMPACTS ON SOCIOECONOMIC RESOURCES (LOCAL ECONOMY AND COUNTY TAX BASE)

Alternative A follows the current management direction. In addition, this alternative would require several development and restoration projects (construction of a small administration and maintenance facility at the east end of the national lakeshore, a new administration building adjacent to the Munising maintenance facility, and a new campground and trails; paving H-58; and partial landscape restoration at the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, Au Sable Light Station, the Munising Range Light Station, and the Abrahamson Farm) to be accomplished over the life of this plan. There would be some benefits from expenditures of about \$37 million in life-cycle costs (estimated for a 25-year period), which would benefit the overall Alger County economy. There would be some moderate to major short-term benefits for some individuals (mostly in the construction industry) from increased business and employment opportunities related to lakeshore projects. This economic activity would occur over time as various projects are phased in and others are completed. How much the Alger County economy actually benefits would depend upon the degree to which national lakeshore needs are fulfilled within and by the local businesses.

The national lakeshore would remain a part of the local socioeconomic environment. NPS expenditures for goods, services, and staff would continue to benefit the local economy. Visitors would still be attracted to the county because of the national lakeshore, and their spending patterns would continue to contribute to the area's economy. The actions proposed in alternative A are expected to result in short-term beneficial impacts on income, earnings, and employment. There are no indications that the actions and effects of this alternative would result in any long-term

impacts on the major socioeconomic indicators (population, income, earnings, employment, unemployment, and poverty) in Alger County.

Cumulative Impacts. Development projects in the national lakeshore, combined with ongoing activities in the construction sector outside the national lakeshore (some new housing construction and proposed commercial development on the outskirts of Munising) would contribute short-term expenditures over the life of the plan that would be a minor beneficial cumulative impact that would primarily affect the construction industry.

Conclusion. Overall, the long-term benefits of implementing this alternative would be minor to moderate when compared to the overall economy of the predominantly rural Alger County. There would be some benefits from expenditures of about \$37 million in life-cycle costs (estimated for a 25-year period), which would benefit the overall Alger County economy. There would be some moderate to major short-term benefits for some individuals (mostly in the construction industry) from increased business and employment opportunities related to lakeshore projects proposed in this alternative (such as construction of a small administration and maintenance facility at the east end of the national lakeshore, a new administration building adjacent to the Munising maintenance facility, and a new campground and trails; paving H-58; and partial landscape restoration at several sites). The operations of the national lakeshore would be a continuing long-term, beneficial contribution to the local economy.

IMPACTS ON VISITOR USE AND EXPERIENCE

Opportunities for Recreational Activities

There would be no new impacts of continuing opportunities for popular recreational

activities (e.g., hiking, backcountry camping, scenic driving, boating, hunting, fishing, kayaking, motorboat tours, skiing, ice climbing, and snowmobiling) continued use of motorboats on the Beaver Lakes and Grand Sable Lakes (with restrictions on motor size), continued commercial air tours, and continued backcountry camping (in designated campgrounds), as in the no-action alternative.

Drive-in camping options would be expanded by adding a campground in the Miners area, providing more opportunities for national lakeshore camping, a moderate long-term benefit. Adding hiking trails south of the Miners area might mean that hikers in this area would encounter more hikers than in the no-action alternative — a minor adverse impact.

Opportunities for touring and learning about historic resources would be improved by restoration/preservation measures and other improvements at Sand Point, Grand Marais, and Au Sable Light Station. These improvements would have a major long-term beneficial impact on visitor experiences.

The opportunity for a long, primitive driving experience leading to primary national lakeshore features would be lost if the county paves the portion of County Road H-58 that is between Little Beaver Lake Road and Grand Sable Lake. This loss would be a moderate adverse impact on visitors over the long term because most feel that that the primitive experience (narrow road, little traffic, slow speeds, and forest canopy, which would change with paving) contributes beneficially to their national lakeshore visit (Pitt, Lime, and Vlaming 1991).

The closure of old logging roads ('two tracks') to vehicular travel would slightly reduce opportunities for visitors to enjoy a more primitive, slower, unpaved driving experience, a minor long-term adverse impact.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on providing opportunities for recreational activities at the national lakeshore under this alternative.

Conclusion. Impacts on opportunities for recreational activities would be mixed and long term. Additional opportunities for camping, hiking, and touring historic resources would have a major beneficial impact, and reducing opportunities for long primitive driving experiences leading to primary national lakeshore features would have a moderate long-term adverse impact.

Access to Primary National Lakeshore Features

If done by the county, road improvements — paving County Road H-58 throughout the lakeshore, enabling visitors to get more easily and quickly to Little Beaver Lake, Beaver Basin overlook, Twelvemile Beach, Log Slide, and Au Sable Light Station — would mean that visitors could see more lakeshore features in a given length of time compared to the no-action alternative, a moderate long-term beneficial impact. On the other hand, certain areas would probably get more visitors and could be crowded at times, a minor long-term adverse impact.

Commercial tour boats and commercial kayak tours, both of which could continue, provide the best views of the Pictured Rocks cliffs, continuing a long-term moderate benefit for visitors onboard boats.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on access to primary national lakeshore features under this alternative.

Conclusion. Compared to the no-action alternative. Impacts on access to primary features would be mostly beneficial and long term. Due to road improvements visitors could see more lakeshore features in a given length of time, a moderate long-term beneficial impact. On the other hand, certain areas could be crowded at times, a minor long-term adverse impact. Motorized and nonmotorized boats would continue to approach cliffs and beaches on the Lake Superior shoreline, a long-term moderate benefit for visitors onboard the boats.

Noise

As in the no-action alternative, noise from snowmobiles, motorboats, and logging vehicles and chainsaws would continue to have a long-term, moderate, adverse impact on the visitor experience unless ways to reduce or muffle the sounds were implemented. Noise from the tour boat public address system would be reduced under this alternative — a long-term, moderate, intermittent, beneficial impact. Sounds from vehicles on the road to Little Beaver Lake (especially sounds from towed trailers or campers) would continue to carry into Beaver Basin, continuing the long-term minor adverse impact on visitors there.

Cumulative Impacts. Noise outside of the national lakeshore is primarily from personal watercraft outside the 0.25-mile boundary near the east and west ends of the national lakeshore, chainsaws associated with logging activities adjacent to the inland buffer zone, and snowmobiles in the winter along County Road H-58. These activities produce generally short-term, minor to moderate adverse impacts (depending on proximity to the noise source and setting). There would also be occasional noise sources within the national lakeshore — snowmobiles and vehicles on roads in the national lakeshore, and logging vehicles and chainsaws used for logging in the inland buffer zone. These disruptions, in

combination with the noise sources mentioned above that are outside the national lakeshore, would result in continuing adverse short-term minor to moderate (depending on proximity to the noise source and setting) cumulative impacts on the natural quiet of the national lakeshore. Noise from the tour boat public address system would be reduced under this alternative — a long-term moderate beneficial impact.

Conclusion. Man-made noise from snowmobiles, motorized boats, and logging vehicles and chainsaws from logging operations would continue to have a long-term, moderate adverse impact on the visitor experience. Noise from the tour boat public address system would be reduced under this alternative — a long-term, moderate, intermittent, beneficial impact.

Scenic Character of County Road H-58

In alternative A, the county would be encouraged to pave H-58 for its entire length between Munising and Grand Marais. Efforts to maintain characteristics that visitors say contribute to the road's scenic character (narrow width, curves, and forest canopy or tunnel) would also be recommended, but some loss of these characteristics would be unavoidable. If County Road H-58 was improved, the section of road close to the shoreline bluff, near Sullivan's Creek, would be relocated away from the shoreline, meaning that views of Lake Superior from H-58 would no longer be possible. Taken together, recommended changes to H-58 under alternative A would result in a moderate long-term adverse impact on the visitor experience.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on the scenic character of County Road H-58 under this alternative.

Conclusion. If recommended changes to County Road H-58 occurred, these changes would have moderate long-term adverse impacts on its scenic character.

Opportunities for People with Disabilities

No new outdoor features would be made accessible to visitors with disabilities under alternative A; however, a new campground at Miners would be accessible to visitors with disabilities, providing additional options for visitors who are not able to use backcountry campgrounds. Compared to the no-action alternative this would have a minor long-term beneficial impact.

Moving the headquarters from Sand Point to a new administration building (accessible to people with disabilities) near the Munising maintenance facility and consolidating the east-end lakeshore administrative and maintenance in a new facility (accessible to people with disabilities) near Grand Marais would be a major beneficial impact on disabled lakeshore staff and other disabled persons needing to conduct business in the national lakeshore.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on opportunities for people with disabilities under this alternative.

Conclusion. Making the Miners campground accessible to people with disabilities would have a minor impact on these visitors.

Moving the headquarters function to a new administration building near Munising and consolidating administrative and maintenance in a new facility near Grand Marais (both accessible to people with disabilities) would have a major long-term beneficial impact on

staff and others with disabilities who might need to conduct business in the national lakeshore.

IMPACTS ON NATIONAL LAKESHORE OPERATIONS

Consolidating national lakeshore operations in new facilities that meet NPS standards at both ends of the national lakeshore would improve operational efficiency and provide a long-term moderate benefit.

If the recommended paving of H-58, the primary access route to the central and eastern portions of the national lakeshore, occurred, this would be a minor long-term benefit for emergency response times in those portions of the lakeshore; the road would still be a slow-speed road by design.

There would be no change in, and thus no new impacts on, staff access (for maintenance and resource management) to the Beaver Lakes, along the Lake Superior shoreline, and the Chapel area.

Developing a new drive-in campground would have a minor long-term adverse impact on enforcement staff who would have another site to patrol.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on the national lakeshore operations under this alternative.

Conclusion. Implementing alternative A would have a moderate long-term benefit on national lakeshore operations from consolidating operations in new facilities at both ends of the national lakeshore.

If the county paves H-58 as recommended, emergency response times in those portions of

the lakeshore would improve, a minor long-term benefit.

There would be no change in, and thus no new impacts on, staff access (for maintenance and resource management) to the Beaver Lakes, along the Lake Superior shoreline, and the Chapel area.

UNAVOIDABLE ADVERSE IMPACTS

The following discussion identifies impacts on resources associated with the implementation of this alternative. These impacts have been identified as being unavoidable, moderate to major, and adverse.

Some archeological sites adjacent to construction or that are easily accessible would be subject to disturbance.

Noise from motorized boats, tour boats, and logging activities would continue.

Recommended improvements to County Road H-58, if made, would change its scenic quality from a primitive road to a rural highway experience between Grand Sable Lake and Kingston Lake.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The irretrievable and irreversible commitments of resources that are associated with this alternative are summarized below. Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long-term (e.g., the regrowth of an old-growth forest). Irretrievable commitments are those that are lost for a period of time (e.g., if a road is constructed, the vegetative productivity is lost for as long as the highway remains).

There would be no irreversible and irretrievable commitments of resources under this alternative.

RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

This section discusses the effects of the short-term use of resources in this alternative on the long-term productivity of the resources.

There would be no adverse effects on biological or agricultural productivity associated with implementing alternative A.

IMPACTS OF ALTERNATIVE C

IMPACTS ON CULTURAL RESOURCES

Archeological Sites

The construction operations associated with paving County Road H-58 and constructing the Miners campground, Sevenmile overlook and access road, the new east-end administrative maintenance facility, and possibly a small interpretive center in the Miners Castle area could result in damage to potential archeological sites in the vicinity of the road right-of-way/ proposed construction. Before any ground-disturbing activities occurred, surveys would be done to identify the presence of archeological resources in the project area. When possible, identified sites would be avoided and protected to the extent possible, depending on staffing and funding levels. If avoidance was not possible, impacts would be mitigated by recovering site data, which would be done in accord with an archeological data recovery assessment developed in consultation with the state historic preservation officer (see “Mitigation” section). The resultant impacts on sites that could not be avoided would be anticipated to be long term, minor (for sites with low data recovery potential) to moderate (for sites with greater data recovery potential), and adverse.

Cumulative Impacts. An archeological site could possibly be disturbed/exposed/impacted by human activity (such as residential development, recreational activities, logging, or artifact hunting) or natural processes (such as erosion or vegetation loss). The possibility of ground disturbance and exposure would be most likely at readily accessible locations such as Miners Beach, Hurricane River, Grand Sable Lake, Little Beaver Lake, and several backcountry locations. The site would be protected to the extent possible, depending on staffing and funding levels. The loss would be mitigated by data recovery (salvage

archeology), which would be done in consultation with the state historic preservation officer (see “Mitigation” section). The resulting impact on such sites would be anticipated to be adverse, long term, and minor (at a site with low data potential) to moderate (at a site with greater data potential). These impacts, combined with the impacts of paving H-58 and constructing the east-end administration/maintenance facility, a campground, and the Sevenmile overlook and access road, and possibly a small interpretive center in the Miners area would have a long-term minor to moderate adverse cumulative impact on archeological sites under alternative C.

Conclusion. Should sites be identified during surveys of project areas, these site(s) would be protected to the extent possible, depending on staffing and funding levels. When possible, the site would be avoided; if avoidance was not possible, impacts would be mitigated by recovering site data. The overall impacts on sites that could not be avoided would be long-term, minor to moderate (depending on the data recovery potential of the site) adverse impacts.

There would be no impairment of archeological sites.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would result in adverse effects on archeological sites that were disturbed by construction activities and could not be avoided.

Historic Structures

Preserving and rehabilitating the Munising Range Light Station; rehabilitating the Sand

Point Coast Guard Station and boat house, and actively interpreting the site and moving some of the adaptive uses to other sites; doing preservation treatment on the ancillary buildings at the Au Sable Light Station; rehabilitating structures at and developing a site plan for the Grand Marais Coast Guard Station; rehabilitating the Grand Marais Harbor of Refuge quarters; and rehabilitating the Abrahamson barn would help protect the documented architectural values (in compliance with the *Secretary's Standards for Historic Structures*) of these structures. Historic buildings would be enhanced through rehabilitation of these resources as recommended in the historic structure reports/plans. Although some historic fabric might be lost during preservation/rehabilitation efforts, a minor long-term adverse impact (because changes would be minimal), overall there would be a long-term minor to moderate beneficial impact because the structures would be rehabilitated and documented architectural elements and values would be protected.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in alternative C to have a cumulative impact on historic structures.

Conclusion. Actions under this alternative would have long-term minor to moderate beneficial impacts on the Munising Range Light Station, Au Sable Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, and the Abrahamson barn because the structures would be rehabilitated and preserved and documented architectural values would be preserved.

There would be no impairment of historic structures.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 "Assessment of Adverse

Impacts") the National Park Service finds that the selection of this alternative would have an adverse impact from the loss of some historic fabric from the preservation/rehabilitation efforts (changes would be minimal). However, overall there would not be an adverse effect because the structures would be preserved from further deterioration and important architectural elements and values would be protected.

Cultural Landscapes

Rehabilitating the cultural landscape at the Munising Range Light Station; restoring and preserving cultural landscape at the Sand Point Coast Guard Station and boat house, actively interpreting the site, and moving some of the adaptive uses to other sites; restoring and preserving the cultural landscape at the Au Sable Light Station; restoring and preserving the cultural landscape and developing a site plan for the Grand Marais Coast Guard Station; restoring and preserving the cultural landscape at the Grand Marais Harbor of Refuge quarters; and rehabilitating and preserving the cultural landscape at the Abrahamson and Becker Farms would be a long-term moderate beneficial impact on these important cultural landscapes. Significant elements of the historic landscape (not buildings) scenes would be restored to a reasonable facsimile of their period of historical significance, documented values would be preserved, and noncontributing elements would be removed.

In areas of abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas, woody vegetation would encroach, resulting in a more closed-in appearance and eventual change to a more wooded scene. This would result in the loss of landscapes associated with farming or other agricultural activities. The potential loss of some of these remaining landscapes in the national lakeshore would have a minor long-term adverse impact on

these cultural landscapes, and relatively few would be left.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in the alternative C to have a cumulative impact on cultural landscapes.

Conclusion. Restoring/rehabilitating/preserving the cultural landscapes at the Munising Range Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and the Abrahamson and Becker Farms under this alternative would have long-term, moderate beneficial impacts on the cultural landscapes associated with these sites by preserving their documented values, removing noncontributing elements, and adding other elements reflective of a reasonable facsimile of the cultural landscape's period of significance.

Woody vegetation would encroach in areas of abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas, resulting in the eventual loss of landscapes associated with farming or other agricultural activities — a minor long-term adverse impact on these cultural landscapes, and relatively few would be left.

There would be no impairment of cultural landscapes.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would not have adverse effects on the cultural landscapes at Munising Range Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and the Abrahamson Farm.

Woody vegetation would encroach in areas of abandoned agricultural operations, cabin clearings, and abandoned roads, resulting in the eventual loss of landscapes associated with farming or other agricultural activities — an adverse impact on these cultural landscapes, and relatively few would be left.

Ethnographic Resources

Under alternative C, there would be no project or construction-related ground disturbance with the potential to impact known ethnographic resources.

Native Americans desiring privacy for religious activities would be disrupted occasionally by such things as the presence of other visitors who are hiking or camping and noise from visitor-related activities such as motorboats, and tour boats. These conflicts would constitute a minor, short-term, reoccurring, adverse impact; however, conflicts would only be occasional. (Areas where impacts could occur include high cliffs or promontories, river and creek mouths, inland lakes, Lake Superior, and the Grand Sable Dunes.)

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in alternative C to have a cumulative impact on ethnographic resources.

Conclusion. Under this alternative, there would be no project or construction-related ground disturbance with the potential to impact known ethnographic resources.

Native Americans desiring privacy for religious activities would be disrupted occasionally by such things as the presence of other visitors who are hiking or camping and noise from visitor-related activities such as motorboats, and tour boats. These conflicts would constitute a minor, short-term,

reoccurring, adverse impact; however, conflicts would only be occasional.

There would be no impairment of ethnographic resources.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would have recurring, occasional, adverse impacts on the ability of Native Americans to collect resources for ceremonial and religious purposes or to conduct ceremonies.

Museum Collection

Moving the museum collection to the proposed new administrative headquarters building near Munising would provide long-term major beneficial effects for the preservation the collection because the new repository would meet modern professional standards and would be more accessible to staff and researchers.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions described above (moving the collection to a repository that meets professional standards) to have a cumulative impact on the museum collection under alternative C.

Conclusion. Actions under this alternative would have long-term major beneficial impacts on the preservation of and access to the national lakeshore’s museum collection by staff and researchers because the collection would be housed in a new repository that would meet modern professional standards and would be more accessible to staff and researchers.

There would be no impairment of the museum collection.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would not have an adverse effect on the museum collection.

IMPACTS ON NATURAL RESOURCES

Species of Concern

Alternative C would have the same effect on piping plover and its habitat as the no-action alternative. The Park Service would continue to protect designated critical habitat for piping plover. No development would occur on the lakeshore-owned beach at Grand Marais, and no NPS action is foreseen to increase visitor use of the beach. National lakeshore regulations requiring pets to be leashed and prohibiting all-terrain-vehicle use would remain in effect. Piping plover critical habitat would benefit from cooperative efforts between the NPS staff and other cooperators, such as monitoring and protecting the beach, while implementing the piping plover recovery plan (USFWS 2003b).

The continuation of current use patterns, including motorized boats on the Beaver and Grand Sable Lakes, would likely have no discernable adverse effect on nesting bald eagles in those areas. This determination is based on the following observations: that the nests were established while boating has been occurring; the use of the lakes during the critical period is low; and the boat use (fishing) occurs outside the tertiary buffer during critical periods (nesting, incubation, and brooding) (USFWS 1983). The nests are 0.25 mile or more away from these lakes, which is an acceptable distance to minimize the effect of human activity during nesting and fledging activity. Hiking occurs on a trail near one of the nests, but use during the critical periods is low, and the trail is outside the

secondary buffer identified by the U.S. Fish and Wildlife Service (USFWS 1983).

Because there would be no change in management of Grand Sable Dunes, Pitcher's thistle and other species of concern found there would continue to be protected by the research natural area designation. The species of concern in the dunes environment would remain stable and primarily subject to natural change. The construction of boat-in campsites at Grand Sable Lake would not likely result in increased use of Grand Sable Dunes because the primary focus of these visitors would be boating and fishing and no trails would be developed.

The abandonment of two track roads in the Beaver Basin and other areas managed as primitive would have a negligible effect on species of concern because the roads do not traverse habitat of species of concern.

Development of the proposed Miners campground and associated trails would increase human activity in the area, but the level of development at this site and throughout the lakeshore would remain well below densities described by the U.S. Fish and Wildlife Service and the Michigan Department of Natural Resources and would not likely affect wolf use in the lakeshore (USFWS 1992; MDNR 1997). There would be no appreciable increase in the density of roads, although road improvements, particularly paving of primary roads, could result in higher travel speeds. High speeds (about 60 miles per hour) could increase the potential for road fatalities if wolf use coincides with traffic use. The design for H-58 would incorporate elements to provide a design speed of about 35 miles per hour.

Cumulative Impacts. Logging on state land is conducted under guidelines established by the Michigan Endangered Species Protection law, Part 365 of the Natural Resources and Environmental Protection Act, Act 451 of the Michigan Public Acts of 1994, which affords protection to species of concern identified by

the state. Logging on corporate and private land is subject to the same law that applies to state land. The ForestLand Group, Limited Liability Corporation, management practices address species of concern as identified by the state and the U.S. Fish and Wildlife Service. The overall effect is that species of concern would continue to be afforded protection in the inland buffer zone.

Also, the U.S. Fish and Wildlife Service and the Michigan Department of Natural Resources conduct active management programs for the gray wolf in the Seney area, a major short- and long-term benefit for this species in the central Upper Peninsula.

Although the policies and laws mentioned above do not guarantee protection, they do serve as more of a deterrent to harming endangered species than without these laws. In combination with federal laws that protect endangered species, overall cumulative effect is that species of concern would continue to be protected in the national lakeshore, a major short- and long-term benefit.

Conclusion. As in the no-action alternative, continuing current management practices would perpetuate short- and long-term beneficial impacts for species of concern. Preserving Grand Sable Dunes as a research natural area would continue to provide a major long-term benefit for species of concern in that area by providing an environment with very limited use or disturbance. There would be no discernable adverse impacts on the bald eagle, Pitcher's thistle, the gray wolf, piping plover, designated piping plover critical habitat, or other species of concern expected if alternative C was implemented. Species occurring north of the inland buffer zone elsewhere in the lakeshore would continue to benefit from federal (NPS) protection. Species on state lands are afforded protection through review and management. Species on corporate and privately owned land are subject to state law and require review by the Michigan Department of Natural Resources to ensure

protection. Although these laws and policies do not guarantee protection, they are an added incentive for protecting these species.

There would be no impairment of species of concern.

Wilderness Resources and Values

Although there would be no designated wilderness, wilderness values in Beaver Basin would be preserved by management under the primitive prescription — a moderate long-term benefit. However, unlike congressionally designated wilderness, which guarantees the wilderness values will be protected in perpetuity, management prescriptions can be changed via a general management plan amendment. Wilderness values could be adversely affected in the long term without the designation of wilderness — a moderate long-term impact.

Converting Chapel Basin from the backcountry to the casual prescription to improve old roads currently used as trails and to provide vehicle access to Chapel Rock would reduce its wilderness values by opening an area that is currently not accessible by vehicle — a long-term moderate adverse impact. This adverse impact would be moderate and long term; it would also be reversible.

Constructing the Sevenmile Creek road and overlook could introduce additional noise from cars and associated activity. The area the road would traverse is predominantly state land. The overlook would be at the Beaver Basin rim, inside the shoreline zone, but the parking area would be set back from the rim to mitigate the noise. Constructing the overlook would also require clearing an area to open a vista that has not been disturbed for some time, which is forested with mature hardwoods. The overlook would be small, and use would be expected to be light. The overlook would diminish wilderness values in

the Beaver Basin to a minor degree — a minor adverse impact.

Opportunities for solitude and natural quiet would improve with the reduction in noise from the tour boat public address systems, which would be a long-term, beneficial, intermittent, moderate impact.

Cumulative Impacts. In Alger County the total area of wilderness would remain unchanged. The opportunities for solitude and natural quiet would continue to be diminished by logging in the inland buffer zone. The effects would be cyclic and depend on the proximity of logging activity to the Beaver Basin. The effect would be moderate and would continue for the long term.

Conclusion. There would be a moderate long-term benefit from continuing to manage Beaver Basin under the primitive prescription. Wilderness values would be reduced because management of a portion of Chapel Basin would change from backcountry to casual recreation — a moderate, long-term adverse impact. The opportunity for solitude and natural quiet would continue to be diminished by logging unless logging was reduced — a moderate, long-term, intermittent, adverse impact. Opportunities for solitude and natural quiet would improve with the reduction of noise from the public address system used on tour boats between the west boundary and Chapel Beach — a moderate, long-term, intermittent beneficial impact.

Development of the Sevenmile Creek overlook would diminish the opportunity for solitude and natural quiet to a minor degree for the long term.

Wilderness values could be adversely affected in the long term without the designation of wilderness — a moderate long-term impact.

Although the opportunity for solitude would continue to be adversely affected by logging in the inland buffer zone to a moderate degree,

these impacts (from logging) would occur intermittently and for short periods of time. Because of modifications to the public address systems, noise from the tour boats would be reduced. There would be no major adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national lakeshore's establishing legislation, (2) key to the natural or cultural integrity or opportunities for enjoyment of the national lakeshore, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of wilderness resources or values from actions proposed under this alternative.

IMPACTS ON SOCIOECONOMIC RESOURCES (LOCAL ECONOMY AND COUNTY TAX BASE)

Alternative C calls for a wide range of development and restoration projects (construction of the Sevenmile overlook road, Miners campground and trails, and the east-end administration/maintenance facility; paving H-58 and other access roads; and partial landscape restoration at the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, Au Sable Light Station, the Munising Range Light Station, and the Abrahamson Farm) to be completed during the life of this plan. There would be some benefits from expenditures of about \$74 million in life-cycle costs (estimated for a 25-year period), which would benefit the overall Alger County economy. There would be some moderate to major short-term benefits for some individuals (mostly in the construction industry) from increased business and employment opportunities related to lakeshore projects proposed in this alternative. This economic activity would occur over time as various projects are phased in and others are completed. How much the Alger County economy actually benefits would depend upon the degree to which

national lakeshore needs are fulfilled within and by the local businesses.

The donation of an easement on 240 acres (state land) and the acquisition of an easement on about 10 acres (ForestLand Group, Limited Liability Corporation land) would benefit the public by having this additional area added to the national lakeshore (for the Sevenmile overlook and road access). A minor one-time, expenditure of federal funds and a negligible effect on the county's tax base (from acquiring 10 acres) would result.

The national lakeshore would remain a part of the local socioeconomic environment. NPS expenditures for goods, services, and staff would continue to benefit the local economy. Visitors would still be attracted to the county because of the national lakeshore, and their spending patterns would continue to contribute to the area's economy. The actions proposed in alternative C are expected to result in short-term beneficial impacts on income, earnings, employment, and unemployment. There are no indications that the actions and effects of this alternative would result in any long-term impacts on the major socioeconomic indicators (population, income, earnings, employment, unemployment, and poverty) in Alger County.

Cumulative Impacts. Development projects within the national lakeshore in this alternative combined with ongoing activities in the construction sector outside the national lakeshore (some new housing construction and proposed commercial development on the outskirts of Munising) would contribute short-term expenditures over the life of the plan that would have a minor beneficial cumulative impact primarily affecting the construction industry.

Conclusion. Overall, the long-term benefits of implementing this alternative would be moderate to major when compared to the overall economy of the predominantly rural Alger County. There would be some benefits

from expenditures of about \$74 million in life-cycle costs (estimated for a 25-year period), which would benefit the overall Alger County economy. There would be some moderate to major short-term benefits for some individuals (mostly in the construction industry) from increased business and employment opportunities related to lakeshore projects proposed in this alternative (such as construction of the Sevenmile overlook road, Miners campground and trails, and the east-end administration/ maintenance facility; paving H-58 and other access roads; and partial landscape restoration at the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, Au Sable Light Station, the Munising Range Light Station, and the Abrahamson Farm). The operations of the national lakeshore would be a continuing long-term, beneficial contribution to the local economy.

IMPACTS ON VISITOR USE AND EXPERIENCE

Opportunities for Recreational Activities

There would be no new impacts from continuing opportunities for popular recreational activities (e.g., hiking, backcountry camping, scenic driving, boating, hunting, fishing, kayaking, tour boats, skiing, snowmobiling, and ice climbing), continuing use of motorboats on the Beaver Lakes and Grand Sable Lake (and restricting motor size, continuing commercial air tours, and continuing backcountry camping only in designated campgrounds, as is currently the case.

Building a new drive-in campground and trails at the Miners area, eliminating the Chapel backcountry campground and providing day use facilities would be a long-term beneficial impact on visitor experience for drive-in campers. Hikers in the Miners area might encounter more hikers than in the no-action alternative – a minor adverse impact. In a related action, expanding the Mosquito

backcountry campground if necessary, and providing new opportunities for boat-in camping at Grand Sable Lake would be a beneficial impact on visitor experience.

Restoration/rehabilitation/preservation measures and other improvements at the Munising Range Light Station, the Sand Point and Grand Marais Coast Guard Stations, Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and the historic farm area near Grand Marais would improve opportunities for touring and learning about historic resources, a moderate long-term beneficial impact. Improvements at Coast Guard Point at Grand Marais would provide additional opportunities for day use activities. Taken together, these additional recreational options and improvements would have a major long-term beneficial impact on the visitor experience.

The opportunity for a long, primitive driving experience that leads to primary national lakeshore features would be lost if the county paves the portion of County Road H-58 between Little Beaver Lake Road and Grand Sable Lake as recommended under this alternative; after paving some stretches would be wider, the road would be busier, vehicle speeds would increase, and the forest canopy over the road would be eliminated in some places. This would be a moderate long-term adverse impact on visitors who want a primitive driving experience.

In most areas of the national lakeshore, old logging roads ("two track" roads) that are now open to the public would remain open. Opportunities for primitive driving experiences on two track roads would continue to be available in alternative C except in Beaver Basin, a moderate long-term beneficial impact.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on providing for recreational

activities at the national lakeshore under this alternative.

Conclusion. Impacts on recreational opportunities would be mixed and long term. Additional opportunities would come from new facilities (e.g., a campground, trails, boat-in campsites, building rehabilitation, landscape restoration, the new overlook and road, and paved roads); these would have a major beneficial impact. The opportunity for a long, primitive driving experience that leads to primary features would be eliminated if the county paves H-58 between Little Beaver Lake Road and Grand Sable Lake, a moderate long-term adverse impact for those wishing for this kind of experience.

Access to Primary National Lakeshore Features

New roads and road improvements – paving the access roads to Miners Falls, Miners Beach, Chapel, Log Slide, and Grand Sable Lake; providing new vehicular access to the Chapel area and a Sevenmile Creek overlook area; upgrading the Beaver Basin overlook road to improved gravel; and recommending that the county pave County Road H-58 throughout the national lakeshore – would mean that visitors could visit many more lakeshore features in a given period of time compared to the no-action alternative, a major long-term beneficial impact.

Implementing alternative C would change the mix of access. More national lakeshore features would be easy to get to or require moderate effort; many challenging experiences would be lost. Crowding would be more likely at popular national lakeshore attractions. Areas that are now relatively remote and wild would have more visitors and more facilities.

Commercial tour boats and commercial kayak tours, both of which could continue to provide the best views of the Pictured Rocks

cliffs, would be a long-term moderate benefit for visitors onboard the boats.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on access to primary national lakeshore features under this alternative.

Conclusion: The effect of implementing alternative C on access to primary features would be mixed and long term. Visitors could visit more lakeshore features in a given period of time than under the no-action alternative, a major long-term beneficial impact; however, certain areas might also become crowded, a minor adverse impact. Motorized and nonmotorized boats would continue to approach cliffs and beaches on the Lake Superior shoreline, a long-term moderate benefit for visitors onboard the boats.

Noise

As in the no-action alternative, noise from snowmobiles, motorboats, and logging vehicles and chainsaws would continue to have a long-term, moderate adverse impact on the visitor experience unless ways to reduce or muffle the sounds were implemented. Noise from the tour boat public address system would be reduced under this alternative — a long-term, moderate, intermittent, beneficial impact. Sounds from vehicles on the road to Little Beaver Lake (especially sounds from towed trailers or campers) would continue to carry into Beaver Basin, continuing the long-term minor adverse impacts on visitors there.

Cumulative Impacts. Noise outside of the national lakeshore is primarily from personal watercraft outside the 0.25-mile boundary near the east and west ends of the national lakeshore, chainsaws associated with logging activities adjacent to the inland buffer zone, and snowmobiles in the winter along County

Road H-58. These activities produce generally short-term, minor to moderate adverse impacts (depending on proximity to the noise source and setting). There would also be occasional noise sources within the national lakeshore — snowmobiles and vehicles on roads in the national lakeshore, and logging vehicles and chainsaws used for logging in the inland buffer zone. These disruptions, in combination with the noise sources mentioned above that are outside the national lakeshore, would result in continuing adverse short-term minor to moderate (depending on proximity to the noise source and setting) cumulative impacts on the natural quiet of the national lakeshore. Noise from the tour boat public address system would be reduced under this alternative — a long-term moderate beneficial impact.

Conclusion: Man-made noise from snowmobiles, motorized boats, and logging vehicles and chainsaws from logging operations would continue to have a long-term, moderate adverse impact on the visitor experience. Noise from the tour boat public address system would be reduced under this alternative — a long-term, moderate, intermittent, beneficial impact.

Scenic Character of County Road H-58

Although efforts should be made to maintain characteristics that visitors say contribute to the road's scenic character (narrow width, curves, and forest canopy or tunnel), paving H-58 would result in some loss of these characteristics. As County Road H-58 was improved, the section of road close to the shoreline bluff, near Sullivan's Creek, would be relocated away from the shoreline. This means that views of Lake Superior from H-58 would no longer be possible. Altogether, changes to H-58 under alternative C would have a moderate long-term adverse impact on the road's scenic character.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on the scenic character of H-58 under this alternative.

Conclusion: If recommended changes were made to County Road H-58, the result would be moderate long-term adverse impacts on its scenic character.

Opportunities for People with Disabilities

No additional existing outdoor attractions would be made accessible to visitors with disabilities under this alternative. A new road to Sevenmile Creek overlook would make it easier for visitors with disabilities to get to or see additional national lakeshore features. A new campground at Miners would be accessible to visitors with disabilities, providing additional options for campers who are not able to use backcountry campgrounds. Coast Guard Point would be a new day use area that is accessible to visitors with disabilities. Compared to the no-action alternative these measures would have a minor long-term beneficial impact on disabled visitors.

Moving the headquarters function from Sand Point to a new administration building (accessible to visitors with disabilities) near the Munising maintenance facility and consolidating the lakeshore administrative and maintenance functions at the east end near Grand Marais would represent a major beneficial impact to disabled lakeshore staff and other disabled persons needing to conduct business in the national lakeshore.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on opportunities for visitors with disabilities under this alternative.

Conclusion: Providing a new road to Seven-mile Creek overlook, a new campground at Miners, and a new day use area at Coast Guard Point (accessible to people with disabilities) would make it easier for disabled visitors to get to, see, or use additional national lakeshore features. These actions would have minor long-term beneficial impacts on visitors with disabilities.

Moving the headquarters function to a new administration building (accessible to people with disabilities) near Munising and consolidating administrative and maintenance in a new facility near Grand Marais (also accessible to people with disabilities) would have a major long-term beneficial impact on staff and others with disabilities who might need to conduct business in the national lakeshore.

IMPACTS ON NATIONAL LAKESHORE OPERATIONS

Operational efficiency would improve, providing a long-term moderate benefit, from consolidating national lakeshore operations (at both ends of national lakeshore) in new facilities that meet NPS standards.

Developing a new drive-in campground would have a minor long-term adverse impact on enforcement staff who would have an additional site to patrol.

If the county paves H-58 as recommended under this alternative, the primary route of access to the central and eastern portions of the national lakeshore, would result in a minor long-term decrease in emergency response times in the central and eastern portions of the lakeshore – a minor long-term benefit because it would remain, by design, a slow-speed road.

National lakeshore staff would continue to use motorized vehicles (wheeled vehicles or boats) to conduct maintenance and resource management activities at the Beaver Lakes and

along the Lake Superior shoreline. Access to the Chapel area would change from hiking to wheeled vehicle with the construction of new roads to these areas making administrative access more efficient.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on national lakeshore operations under this alternative.

Conclusion. Implementing alternative C would have a net moderate long-term benefit on national lakeshore operations from consolidating operations in new facilities at both ends of the national lakeshore.

If the county paves H-58 as recommended under this alternative, emergency response times would decrease, a minor long-term benefit because it would remain, by design, a slow-speed road.

Continued motorized access for maintenance and resource management activities at the Beaver Lakes and along the Lake Superior shoreline, and changing access to the Chapel area from hiking to vehicles would make administrative access more efficient in these areas.

UNAVOIDABLE ADVERSE IMPACTS

The following discussion identifies impacts on resources associated with the implementation of this alternative. These impacts have been identified as being unavoidable, moderate to major, and adverse.

Some archeological sites adjacent to construction or that are easily accessible would be subject to disturbance.

Converting Chapel Basin from the primitive to the casual recreation management

prescription would have a long-term moderate adverse impact.

The opportunity for solitude and natural quiet would continue to be reduced by logging and tour boat operations (unless logging was reduced or the public address system was modified to reduce projected sound), which would be a long-term moderate, intermittent, adverse impact.

The opportunity for an extended primitive driving experience to primary national lakeshore features over primitive roads would be lost.

Crowding and loss of solitary primitive experiences would have a major long-term negative effect on the visitor experience.

Noise from motorized boats, tour boats, and logging activities would continue. If made by the county, improvements to County Road H-58 in the lakeshore would change its scenic quality from a primitive road to a rural highway experience between Grand Sable Lake and Kingston Lake.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The irretrievable and irreversible commitments of resources that are associated with

this alternative are summarized below. Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long-term (e.g., the regrowth of an old-growth forest). Irretrievable commitments are those that are lost for a period of time (e.g., if a road is constructed, the vegetative productivity is lost for as long as the highway remains).

Constructing the 2.5-mile improved gravel road to the proposed Sevenmile overlook would eliminate the vegetative production of the 2.5 miles of roadbed.

RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

This section discusses the effects of the short-term use of resources in this alternative on the long-term productivity of the resources.

There would be no adverse effects on biological, agricultural, or economic productivity associated with implementing alternative C.

IMPACTS OF ALTERNATIVE E

IMPACTS ON CULTURAL RESOURCES

Archeological Sites

The construction operations associated with paving sections of County Road H- 58 and constructing the Miners River campground, the new east- end administrative maintenance facility, and possibly a small interpretive center in the Miners area could result in damage to potential archeological sites in the vicinity of the road right- of- way/proposed construction. Before any ground- disturbing activities occurred, surveys would be done to identify the presence of archeological resources in the project area. When possible, identified sites would be avoided and protected to the extent possible, depending on staffing and funding levels. If avoidance was not possible, impacts would be mitigated by recovering site data, which would be done in accord with an archeological data recovery assessment developed in consultation with the state historic preservation officer (see “Mitigation” section). The resultant impacts on sites that could not be avoided would be anticipated to be long term, minor (for sites with low data recovery potential) to moderate (for sites with greater data recovery potential), and adverse.

Cumulative Impacts. An archeological site could possibly be disturbed/exposed/ impacted by human activity (such as residential development, recreational activities, logging, or artifact hunting) or natural processes (such as erosion or vegetation loss). The possibility of ground disturbance and exposure would be most likely at readily accessible locations such as Miners Beach, Hurricane River, Grand Sable Lake, Little Beaver Lake, and several backcountry locations. The site would be protected to the extent possible, depending on staffing and funding levels. The loss would be mitigated by data recovery (salvage

archeology), which would be done in consultation with the state historic preservation officer (see “Mitigation” section). The resulting impact on such sites would be anticipated to be adverse, long term, and minor (at a site with low data potential) to moderate (at a site with greater data potential). These impacts, combined with the impacts of paving section of H- 58 and constructing the east- end administration/ maintenance facility, a campground, and possibly a small interpretive center in the Miners area would have a long- term minor to moderate adverse cumulative impact on archeological sites under alternative E.

Conclusion. Should sites be identified during surveys of project areas, these site(s) would be protected to the extent possible, depending on staffing and funding levels. When possible, the site would be avoided; if avoidance was not possible, impacts would be mitigated by recovering site data. The overall impacts on sites that could not be avoided would be long-term, minor to moderate (depending on the data recovery potential of the site) adverse impacts.

There would be no impairment of archeological sites.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would result in adverse effects on archeological sites that were disturbed by construction activities and could not be avoided.

Historic Structures

Preserving and rehabilitating the Munising Range Light Station; rehabilitating the Sand Point Coast Guard Station and boat house,

and actively interpreting the site and moving some of the adaptive uses to other sites; doing preservation treatment on the ancillary buildings at the Au Sable Light Station; rehabilitating structures at and developing a site plan for the Grand Marais Coast Guard Station; rehabilitating the Grand Marais Harbor of Refuge quarters; and rehabilitating the Abrahamson barn would help protect the documented architectural values (in compliance with the *Secretary's Standards for Historic Structures*) of these structures. Historic buildings would be enhanced through rehabilitation of these resources as recommended in the historic structure reports/ plans. Although some historic fabric might be lost during preservation/ rehabilitation efforts, a minor long- term adverse impact (because changes would be minimal), overall there would be a long- term minor to moderate beneficial impact because the structures would be rehabilitated and documented architectural elements and values would be protected.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in alternative E to have a cumulative impact on historic structures.

Conclusion. Actions under this alternative would have long- term minor to moderate beneficial impacts on the Munising Range Light Station, Au Sable Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, and the Abrahamson barn because the structures would be rehabilitated and preserved and documented architectural values would be preserved.

There would be no impairment of historic structures.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 "Assessment of Adverse Impacts") the National Park Service finds that

the selection of this alternative would have an adverse impact from the loss of some historic fabric from the preservation/rehabilitation efforts (changes would be minimal). However, overall there would not be an adverse effect because the structures would be preserved from further deterioration and important architectural elements and values would be protected.

Cultural Landscapes

Rehabilitating the cultural landscape at the Munising Range Light Station; restoring and preserving cultural landscape at the Sand Point Coast Guard Station and boat house, actively interpreting the site, and moving some of the adaptive uses to other sites; restoring and preserving the cultural landscape at the Au Sable Light Station; rehabilitating and preserving the cultural landscape and developing a site plan for the Grand Marais Coast Guard Station; rehabilitating and preserving the cultural landscape at the Grand Marais Harbor of Refuge quarters; and rehabilitating and preserving the cultural landscape at the Abrahamson and Becker Farms would be a long- term moderate beneficial impact on these important cultural landscapes. Significant elements of the historic landscape (not buildings) scenes would be restored to a reasonable facsimile of their period of historical significance, documented values would be preserved, and noncontributing elements would be removed.

In areas of abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas, woody vegetation would encroach, resulting in a more closed- in appearance and eventual change to a more wooded scene. This would result in the loss of landscapes associated with farming or other agricultural activities. The potential loss of some of these remaining landscapes in the national lakeshore would have a minor long- term adverse impact on

these cultural landscapes, and relatively few would be left.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in alternative E to have a cumulative impact on cultural landscapes.

Conclusion. Restoring/rehabilitating/preserving the cultural landscapes at the Munising Range Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and the Abrahamson and Becker Farms under this alternative would have long-term, moderate beneficial impacts on the cultural landscapes associated with these sites by preserving their documented values, removing noncontributing elements, and adding other elements reflective of a reasonable facsimile of the cultural landscape's period of significance.

Woody vegetation would encroach in areas of abandoned agricultural operations, cabin clearings, and abandoned roads that are not part of other visitor service areas, resulting in the eventual loss of landscapes associated with farming or other agricultural activities — a minor long-term adverse impact on these cultural landscapes, and relatively few would be left.

There would be no impairment of cultural landscapes.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would not have adverse effects on the cultural landscapes at Munising Range Light Station, the Sand Point and Grand Marais Coast Guard Stations, the Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and the Abrahamson Farm.

Woody vegetation would encroach in areas of abandoned agricultural operations, cabin clearings, and abandoned roads, resulting in the eventual loss of landscapes associated with farming or other agricultural activities — an adverse impact on these cultural landscapes, and relatively few would be left.

Ethnographic Resources

Under alternative E, there would be no project or construction-related ground disturbance with the potential to impact known ethnographic resources.

Native Americans desiring privacy for religious activities would be disrupted occasionally by such things as the presence of other visitors who are hiking or camping and noise from water-based visitor-related activities such as motorboats, and tour boats in the casual recreation prescription. These conflicts would constitute a minor, short-term, reoccurring, adverse impact; however, conflicts would only be occasional. (Areas where impacts could occur include high cliffs or promontories, river and creek mouths, inland lakes, Lake Superior, and the Grand Sable Dunes.)

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions proposed in alternative E to have a cumulative impact on ethnographic resources.

Conclusion. Under this alternative, there would be no project or construction-related ground disturbance with the potential to impact known ethnographic resources.

Native Americans desiring privacy for religious activities would be disrupted occasionally by such things as the presence of other visitors who are hiking or camping and noise from water-based visitor-related activities such as motorboats, and tour boats in the casual recreation prescription. These

conflicts would constitute a minor, short-term, reoccurring, adverse impact; however, conflicts would only be occasional. There would be no impairment of ethnographic resources.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would have recurring, occasional, adverse impacts on the ability of Native Americans to collect resources for ceremonial and religious purposes or to conduct ceremonies.

Museum Collection

Moving the museum collection to the proposed new administrative headquarters building near Munising would provide long-term major beneficial effects for the preservation the collection because the new repository would meet modern professional standards and would be more accessible to staff and researchers.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would be expected to combine with the actions described above (moving the collection to a repository that meets professional standards) to have a cumulative impact on the museum collection under alternative E.

Conclusion. Actions under this alternative would have long-term major beneficial impacts on the preservation of and access to the national lakeshore’s museum collection by staff and researchers because the collection would be housed in a new repository that would meet modern professional standards and would be more accessible to staff and researchers.

There would be no impairment of the museum collection.

Section 106 Summary. Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.5 “Assessment of Adverse Impacts”) the National Park Service finds that the selection of this alternative would not have an adverse effect on the museum collection.

IMPACTS ON NATURAL RESOURCES

Species of Concern

Alternative E would have the same effect on piping plover and its habitat as the no-action alternative. The Park Service would continue to protect designated critical habitat for piping plover. No development would occur on the lakeshore-owned beach at Grand Marais, and no NPS action is foreseen to increase visitor use of the beach. National lakeshore regulations requiring pets to be leashed and prohibiting all-terrain-vehicle use would remain in effect. Piping plover critical habitat would benefit from cooperative efforts between the NPS staff and other cooperators, such as monitoring and protecting the beach, while implementing the piping plover recovery plan (USFWS 2003b).

Eliminating vehicle access to the Little Beaver Lake campground and use of motorized boats on Beaver and Little Beaver Lakes could reduce the already low potential for disturbance of bald eagles nesting in this area, a beneficial impact but one that would be difficult to quantify. There would be no change at other nest sites in the lakeshore and no adverse effect would be expected.

Because there would be no change in management of Grand Sable Dunes, Pitcher’s thistle and other species of concern found there, would continue to benefit from the protection afforded by research natural area designation. All species of concern found in the dunes would remain protected and primarily subject to natural changes.

Campground development at Miners Basin would result in a minor increase of human presence and traffic for the long term. However, the increase would be localized and seasonal. The very low density of roads and development in the national lakeshore would have a negligible effect on the gray wolf use in the lakeshore and the central Upper Peninsula (USFWS 1992; MDNR 1997). There would be no appreciable increase in the density of roads, although road improvements, particularly paving of large portions of the primary roads, could result in higher travel speeds. High speeds (about 60 miles per hour) could increase the potential for road fatalities if wolf use coincides with traffic use. The design for H- 58 would incorporate elements to provide a design speed of about 35 miles per hour.

The abandonment of two track roads in the Beaver Basin and other areas managed under the primitive prescription would have a negligible effect on species of concern.

Cumulative Impacts. In Michigan, endangered species protection applies to all private and public land. The Endangered Species Protection law states that an individual may not harm or take threatened and endangered species (Michigan Natural Resources and Environmental Protection Act 1994, part 365). It is the responsibility of the landowner to submit projects for review to determine if a threatened or endangered species is known to occur or has potential to occur within the project scope. Logging on state land is conducted under these guidelines. ForestLand Group, Limited Liability Corporation management practices address species of concern as identified by the Michigan Department of Natural Resources and the U.S. Fish and Wildlife Service. The overall effect is that species of concern would continue to be afforded protection in the inland buffer zone as well as in the shoreline zone.

Also, the U.S. Fish and Wildlife Service and the Michigan Department of Natural Resources conduct active management

programs for the gray wolf in the Seney area, a major short- and long- term benefit for this species in the central Upper Peninsula.

Although the policies and laws mentioned above do not guarantee protection, they do serve as more of a deterrent to harming endangered species than without these laws. In combination with federal laws that protect endangered species, overall cumulative effect is that species of concern would continue to be protected in the national lakeshore, a major short- and long - term benefit.

Conclusion. As in alternative A, continuing current management practices would perpetuate short- and long- term beneficial impacts for species of concern. Preserving Grand Sable Dunes as a research natural area would continue to provide a major long- term benefit for species of concern in that area by providing an environment with very limited use or disturbance. There would be no discernable adverse impacts on the bald eagle, Pitcher's thistle, the gray wolf, piping plover, designated piping plover critical habitat, or other species of concern expected if alternative E was implemented. Species occurring north of the inland buffer zone elsewhere in the lakeshore would continue to benefit from federal (NPS) protection. Species on state lands are afforded protection through review and management. Species on corporate and privately owned land are subject to state law and require review by the Michigan Department of Natural Resources to ensure protection. Although these laws and policies do not guarantee protection, they are an added incentive for protecting these species.

There would be no impairment of species of concern.

Wilderness Resources and Values

The designation of 16,959 acres of land in the Beaver and Chapel Basins as wilderness would preserve in perpetuity the wilderness values

these areas have — a major long- term beneficial impact on wilderness values.

Opportunities for solitude and natural quiet would also be improved because tour boats would no longer come as close to shore between Miners Beach and Chapel Beach — a moderate, long- term beneficial benefit.

Reducing the noise from tour boat public address system operations between Miners Castle and Chapel Rock would be a moderate long- term intermittent, beneficial impact on opportunities for solitude and natural quiet. East of Miners Beach tour boats and other motorized boats would be required to stay outside the lakeshore boundary, further reducing the effects of noise from that source.

Cumulative Impacts. The addition of Beaver and Chapel Basins as wilderness (16,959 acres) would increase the protection afforded by wilderness designation in the central Upper Peninsula to 53,402 acres (Big Island 6,008 acres, Strangmoor Bog 25,150 acres, and Rock River Canyon 5,285 acres) — a major long- term beneficial cumulative impact on wilderness values.

Logging activity would continue in the inland buffer zone, but the effect on opportunities for solitude and natural quiet would be decreased because logging immediately adjacent to the area proposed for wilderness designation would be discontinued as prescribed in the primitive management prescription — a moderate long- term benefit.

Conclusion. Overall, wilderness values would be enhanced more than the preferred alternative because a larger area with wilderness characteristics would be preserved (16,959 acres) — a long- term major benefit. Reducing the noise from tour boat public address system operations between Miners Castle and Chapel Rock would be a moderate long- term intermittent, beneficial impact on opportunities for solitude and natural quiet. However, motorized boat use would be prohibited

within the 0.25- mile- wide portion of Lake Superior from Miners Beach to the mouth of Spray Creek. This would remove much of the noise from motorized boats — a long- term moderate beneficial impact on opportunities for solitude and natural quiet, and other wilderness values. The total area of wilderness in the central Upper Peninsula would increase by about 32% — a major, long- term, beneficial impact for those who desire that kind of experience.

There would be no impairment of wilderness resources or values from actions proposed under this alternative.

IMPACTS ON SOCIOECONOMIC RESOURCES (LOCAL ECONOMY AND COUNTY TAX BASE)

Alternative E outlines a variety of development and restoration projects (construction of Miners campground and trails, the east- end administration/maintenance facility, and possibly a small interpretive center; paving sections of H- 58 and other access roads; and partial landscape restoration at the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, Au Sable Light Station, the Munising Range Light Station, and the Abrahamson Farm) to be accomplished over the life of this plan. There would be some benefits from expenditures of about \$37 million in life- cycle costs (estimated for a 25- year period), which would benefit the overall Alger County economy. There would be some moderate to major short- term benefits for some individuals (mostly in the construction industry) from increased business and employment opportunities related to lakeshore projects proposed in this alternative. This economic activity would occur over time as various projects are phased in and others are completed. How much the Alger County economy actually benefits would depend upon the degree to which national lakeshore needs are fulfilled within and by the local businesses.

Some potential tour boat riders might feel that being close to the Pictured Rocks (the primary attraction) but farther (0.25 mile) from the shore between Miners Beach and Chapel Beach would have little influence on their decision to ride the tour boat. Others might choose not to take the tour because the boat would be prohibited from operating as close to the shore in that area as it has in the past (less than 0.25 mile). If this changed affected the popularity of the tours so that the economic viability of the operation suffered, the tours might be discontinued altogether, a major adverse long-term impact on the tour operators.

The national lakeshore would remain a part of the local socioeconomic environment. NPS expenditures for goods, services, and staff would continue to benefit the local economy. Visitors would still be attracted to the county because of the national lakeshore, and their spending patterns would continue to contribute to the area's economy. The actions proposed in alternative E would be expected to result in short-term beneficial impacts on income, earnings, employment, and unemployment. There are no indications that the actions and effects of this alternative would result in any long-term impacts on the major socioeconomic indicators (population, income, earnings, employment, unemployment, and poverty) in Alger County.

Cumulative Impacts. Development projects in the national lakeshore combined with ongoing activities in the construction sector outside the national lakeshore would contribute short-term expenditures over the life of the plan that would be a minor beneficial cumulative impact that would primarily affect the construction industry.

Conclusion. Overall, the long-term benefits of implementing this alternative would be minor to moderate when compared to the overall economy of the predominantly rural Alger County. There would be some benefits from expenditures of about \$37 million in life-

cycle costs (estimated for a 25-year period), which would benefit the overall Alger County economy. There would be some moderate to major short-term benefits for some individuals (mostly in the construction industry) from increased business and employment opportunities related to lakeshore projects proposed in this alternative (such as construction of Miners campground and trails, the east-end administration/ maintenance facility, and possibly a small interpretive center; paving sections of H-58 and other access roads; and partial landscape restoration at the Sand Point and Grand Marais Coast Guard Stations, the Grand Marais Harbor of Refuge quarters, Au Sable Light Station, the Munising Range Light Station, and the Abrahamson Farm). The operations of the national lakeshore would be a continuing long-term, beneficial contribution to the local economy.

If the restriction on tour boats operating closer than 0.25 mile from the shore between Miners and Chapel Beaches affected the tour's popularity and the economic viability of the operation suffered, tours might be discontinued, which would be a major, adverse, long-term impact on tour operations.

IMPACTS ON VISITOR USE AND EXPERIENCE

Opportunities for Recreational Activities

There would be many changes in opportunities for recreational activities compared to the no-action alternative. Motorboats would no longer be allowed on the Beaver Lakes because Beaver Basin would be managed under the primitive prescription. Between the east end of Miners Beach and the mouth of Sevenmile Creek, the 0.25-mile strip of Lake Superior within the national lakeshore (about 18 miles) would be managed under the primitive prescription. This means that motorized boats (including commercial tour boats) would no longer be permitted to use these waters. The *Superior*, a shipwreck near

Spray Falls that is often visited by scuba divers, would become inaccessible to motorized dive boats.

Eliminating motorboats on the Beaver Lakes, eliminating motorized boats, including commercial tour boats, from the 0.25-mile strip between the east end of Miners Beach and the mouth of Sevenmile Creek, and making the *Superior* shipwreck near Spray Falls inaccessible to motorized dive boats would have a major adverse impact on the visitor experience.

A new drive-in campground and trails at the Miners area would result in additional opportunities for visitors seeking those kinds of experiences — a long-term benefit. However, hikers in the Miners area might encounter more hikers than in the no-action alternative, a minor adverse impact.

Opportunities for touring and learning about historic resources would be improved by rehabilitation/restoration/preservation measures and other improvements at the Munising Range Light Station, Sand Point and Grand Marais Coast Guard Stations, Au Sable Light Station, the Grand Marais Harbor of Refuge quarters, and the historic farm area. These additional or improved recreational opportunities would have a major beneficial impact on the visitor experience.

Opportunities for a primitive driving experience leading to primary national lakeshore features could be reduced if the country paves two stretches of County Road H-58 as recommended, a moderate adverse impact over the long term on visitors seeking this kind of experience. There could be a moderate beneficial impact on those not wanting a primitive driving experience.

Several additional unpaved and primitive driving opportunities would be lost in alternative E. Closing Little Beaver Lake road and the Beaver Basin overlook road to motor vehicles and closing two track roads that are now open

to the public in areas managed as primitive, such as Chapel Basin and Beaver Basin (see alternative E map) would have a moderate long-term adverse impact on visitor experiences. However, converting what are now Little Beaver Lake road and Beaver Basin overlook road to hiking trails after closing them to motor vehicles would have a moderate long-term beneficial impact for hikers.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on opportunities for recreational opportunities under this alternative.

Conclusion. Impacts on recreational opportunities would be mixed and long term. Loss of motorboating opportunities on the Beaver Lakes and for 0.25 mile of Lake Superior between Miners Beach and the mouth of Sevenmile Creek would have a long-term major adverse impact. Additional or improved recreational opportunities (a new campground and hiking opportunities and opportunities to tour historic resources) would have a major beneficial impact. Additional hiking opportunities in Beaver Basin and along Little Beaver Lake road would have a moderate beneficial impact.

Access to Primary National Lakeshore Features

If, as recommended, the county paves County Road H-58 throughout the national lakeshore, a few national lakeshore features such as Au Sable Light Station and Log Slide would be somewhat easier to get to — a minor beneficial impact on the visitor experience. Converting Little Beaver Lake and Beaver Basin overlook access roads to hiking trails would make it more difficult for some visitors to get to these features, resulting in a minor reduction of motorized access to national lakeshore features but a long-term beneficial impact on

hikers. Features with improved access would probably get more visitors and could be crowded at times, a minor long-term adverse impact.

An 18-mile stretch of Lake Superior (0.25 mile wide) would be managed under the primitive prescription, and would be off-limits to motorboats except in an emergency or when human safety was threatened. Although commercial tour boats could continue, people on the tours would not see the shoreline or cliffs nearly as well as in the no-action alternative because the vessels would have to stay 0.25 mile from shore. If this change affected the popularity of the tours so that the economic viability of the operation suffered, the tours might be discontinued altogether, a major long-term adverse impact on the tour operators. Commercial kayak tours, which provide good views of the cliffs from the water, would experience a minor long-term beneficial impact from the removal of motorized boats in the primitive prescription. Nonetheless, up to 37,000 people per year could lose an opportunity to get good views of the cliffs and beaches from a tour boat, a major long-term adverse impact on the visitor experience.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on access to primary national lakeshore features under this alternative.

Conclusion. Impacts on motorized access to primary features would be mostly adverse and long term. Notably, the opportunity to get close-up (less than 0.25 mile) views of cliffs and beaches from Miners Beach to Chapel Beach from a tour boat or other motorboat would be lost, a major adverse impact. If this change affected the popularity of the tours so that the economic viability of the operation suffered, the tours might be discontinued altogether, a major long-term adverse impact on visitors. Commercial kayak tours, which

provide good views of the cliffs from the water, would experience a minor long-term beneficial impact from the removal of motorized boats in the primitive prescription.

Noise

Noise from snowmobiles, motorboats, and logging vehicles and chainsaws would have a long-term, moderate adverse impact on the visitor experience in much of the national lakeshore unless ways to reduce or muffle the sounds were implemented. Because of modifications to the tour boat public address system, noise would be reduced from the west boundary to Chapel Beach — a moderate, long-term, beneficial, intermittent impact. Noise from motorized boats on Lake Superior within 0.25 mile of the shore would be reduced in the central portion of the national lakeshore (near Beaver Basin), with users of shoreline and beach areas benefiting most. Motorboat noise would be eliminated on the Beaver Lakes (managed as the primitive prescription). Compared to the no-action alternative these changes would have a long-term minor beneficial impact on visitors who find such noise undesirable because the current 10-horsepower restriction produces only low noise levels.

Reduced noise from the tour boat public address system would have a moderate, long-term, intermittent beneficial impact on the visitor experience for visitors who find such noise undesirable.

Eliminating motorboats on the Beaver Lakes and converting Little Beaver Lake road to a hiking trail would eliminate these sources of noise and would have a long-term minor beneficial impact.

Cumulative Impacts. Noise outside of the national lakeshore is primarily from personal watercraft outside the 0.25-mile boundary near the east and west ends of the national lakeshore, chainsaws and logging vehicles

associated with logging activities adjacent to the inland buffer zone, and snowmobiles in the winter along County Road H-58. These activities produce generally short-term, minor to moderate adverse impacts (depending on proximity to the noise source and setting). There are also occasional noise sources within the national lakeshore – the tour boat public address system (which would be reduced under this alternative), snowmobiles and vehicles on roads in the national lakeshore, and chainsaws used for logging in the inland buffer zone. These disruptions, in combination with the noise sources mentioned above that are outside the national lakeshore, would result in continuing adverse short-term minor to moderate (depending on proximity to the noise source and setting) cumulative impacts on the natural quiet of the national lakeshore.

Conclusion. Alternative E would have long-term beneficial impacts related to reducing man-made noise in the national lakeshore. Boat noise would be reduced along 18 miles (from Miners Beach to the mouth of Seven-mile Creek) of the shoreline and adjacent areas, resulting in a moderate long-term beneficial impact on the visitor experience. Reduced noise from the modified tour boat public address system from the west boundary to Chapel Beach would be a long-term, moderate, beneficial, intermittent impact on people looking for a quiet experience. Reduced motorboat and vehicle noise near Beaver Lakes would also have a minor beneficial impact.

Man-made noise from snowmobiles, motorized boats, and logging vehicles and chainsaws from logging operations would continue to have a long-term, moderate adverse impact on the visitor experience. Noise from the tour boat public address system would be reduced under this alternative — a long-term, moderate, intermittent, beneficial impact.

Scenic Character of County Road H-58

Efforts should be made to maintain characteristics that visitors say contribute to the County Road H-58's scenic character. However, if it is upgraded by the county as recommended under this alternative, some loss of these characteristics would be unavoidable and would result in a moderate long-term adverse impact on the visitor experience.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on the scenic character of County Road H-58 under this alternative.

Conclusion. If undertaken by the county as recommended under this alternative, changes to County Road H-58 would have moderate long-term adverse impacts on its scenic character.

Opportunities for People with Disabilities

Outdoor lakeshore attractions that are accessible to visitors with disabilities would remain as they currently exist under this alternative except that Little Beaver Lake would no longer be accessible to disabled visitors and a new campground at Miners would be accessible to disabled visitors. This new campground would provide additional options for visitors who are not able to use backcountry campgrounds. The Grand Marais Coast Guard Point would be a new day use area that is accessible to visitors with disabilities. Compared to the no-action alternative, these measures would have a minor long-term beneficial impact on disabled visitors.

Moving the headquarters function from Sand Point to a new administration building (accessible to people with disabilities) near the Munising maintenance facility and consolidating the east-end lakeshore administrative and maintenance functions in a new facility

(also accessible to people with disabilities) near Grand Marais would be a major beneficial impact on disabled lakeshore staff and other disabled persons needing to conduct business in the national lakeshore.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on people with disabilities under this alternative.

Conclusion. Under this alternative, Little Beaver Lake would no longer be accessible to visitors with disabilities, the new campground at Miners would be accessible to visitors with disabilities, and Grand Marais Coast Guard Point would be a new day use area that is accessible to visitors with disabilities. Compared to the no-action alternative, these measures would have a minor long-term beneficial impact on visitors with disabilities.

Moving the headquarters function to a new administration building (accessible to people with disabilities) near Munising and consolidating administrative and maintenance in a new facility (also accessible to people with disabilities) near Grand Marais would have a major long-term beneficial impact on staff and others with disabilities who might need to conduct business in the national lakeshore.

IMPACTS ON NATIONAL LAKESHORE OPERATIONS

Consolidating national lakeshore operations in new facilities that meet NPS standards at both ends of the national lakeshore would improve operational efficiency and provide a long-term moderate benefit.

There would be a minor long-term benefit to (decrease in) emergency response times in those portions of the lakeshore if the county paves H-58 (the primary access route to the central and eastern portions of the national

lakeshore) as recommended under this alternative. The road would still be a slow-speed road by design.

Precluding national lakeshore staff use of motorboats within national lakeshore waters adjacent to the proposed wilderness (a stretch of about 18 miles), except in emergencies would have a minor adverse impact on the operational efficiency of the national lakeshore staff.

Administrative access to the Beaver Lakes area would change from motorized access to hiking access because Little Beaver Lake Road would be closed and converted to a hiking trail. This would affect routine maintenance and resource management activities as well as emergency response (motorized access is allowed for emergencies, however conversion from road to trail might restrict the size of vehicle that could be accommodated) – a minor adverse impact on the operational efficiency of the national lakeshore staff. There would be no change in, and thus no new impacts on, access to the Chapel area.

Developing a new drive-in campground would have a minor long-term adverse impact on enforcement staff who would have another site to patrol.

Cumulative Impacts. No past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts just described, result in cumulative impacts on national lakeshore operations under this alternative.

Conclusion: The impacts of alternative E on national lakeshore operations would be mixed. The proposed consolidated operations facilities would increase efficiency – a long-term moderate benefit.

If changes are made by the county as recommended, improving H-58 would improve emergency response times in some areas, a minor long-term benefit.

Precluding staff use of motorboats within national lakeshore waters adjacent to the proposed wilderness (about 18 miles) except in emergencies would have a minor adverse impact on the operational efficiency of the national lakeshore staff.

Changes to mode of access would have a minor adverse impact on national lakeshore operations in Beaver Basin. Altogether, changes in mode of access would have a moderate long-term adverse impact on the operational efficiency of the national lakeshore staff.

UNAVOIDABLE ADVERSE IMPACTS

The following discussion identifies impacts on resources associated with the implementation of this alternative. These impacts have been identified as being unavoidable, moderate to major, and adverse.

Some archeological sites adjacent to construction or that are easily accessible would be subject to disturbance.

Restricting motorized boats east of Miners Beach could result in a major loss of revenue for tour boat operations and a missed opportunity for most visitors to see the Pictured Rocks cliffs.

Converting the Little Beaver Lake Road to a trail would reduce access to the Beaver Lakes.

Closing Little Beaver Lake and the Beaver Basin overlook access roads would reduce opportunities for a primitive driving experience and preclude visitors with disabilities.

The management of the offshore waters as primitive would prohibit access by motorboats between Miners Beach and the mouth of Sevenmile Creek (where wilderness

extends 0.25 mile offshore into Lake Superior).

Improvements to County Road H-58 in the lakeshore would change its scenic quality from a primitive road to a rural highway experience between Grand Sable Lake and Log Slide resulting in loss in extended primitive driving experiences.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The irretrievable and irreversible commitments of resources that are associated with this alternative are summarized below. Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long-term (e.g., the regrowth of an old-growth forest). Irretrievable commitments are those that are lost for a period of time (e.g., if a road is constructed, the vegetative productivity is lost for as long as the highway remains).

There would be no irreversible and irretrievable commitments of resources under this alternative.

RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

This section discusses the effects of the short-term use of resources in this alternative on the long-term productivity of the resources.

There would be no adverse effects on biological or agricultural productivity associated with implementing alternative E.

Economic productivity would be reduced proportional to the contribution of Pictured Rocks Tours to the local economy.

